# RESPONSIVENESS SUMMARY TO PUBLIC COMMENTS

## EPA PUBLIC NOTICE REGARDING CHANGES TO MISSOURI'S 2002 SECTION 303(D) LIST

DECEMBER 2003

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**PUBLIC NOTICE ON EPA REVISIONS TO MISSOURI 2002 SECTION 303(d) LIST SUMMARY OF PUBLIC COMMENTS AND EPA RESPONSES**

## INTRODUCTION

Section 303(d) of the Clean Water Act (CWA) requires each state to identify waters for which existing pollution controls are insufficient for the affected waters to attain state water quality standards. States must also establish a priority ranking for waters, taking into account the severity of the pollution and the uses to be made of such waters, and develop total maximum daily loads (TMDLs) for these waters. A TMDL specifies the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and allocates pollutant loadings among point and nonpoint pollutant sources.

EPA reviewed Missouri's 2002 submission, which included a description of the data and information the State considered, its methodology for identifying waterbodies, and Missouri's responses to public comment to determine whether Missouri listed all waterbodies and pollutants not attaining water quality standards and meeting federal listing requirements. EPA had reviewed the existing and readily available data and information produced during Missouri's public comment process to determine the adequacy of the State's response. EPA concluded that Missouri's 2002 list of water quality limited segments (WQLS) still requiring TMDLs did not include certain waters and pollutants required to be listed. Consequently, EPA sent a letter to the Missouri Department of Natural Resources on April 29, 2003, informing them that Missouri's 2002 Section 303(d) list was partially approved and partially disapproved.

At the same time, EPA identified additional WQLS still requiring TMDLs in Missouri, as provided for in 40 C.F.R. 130.7(d)(2). EPA then issued a public notice on May 1, 2003, seeking written comments on EPA's proposed decisions to add waters and pollutants to Missouri's 2002 Section 303(d) list. EPA's proposed action on the 2002 Missouri 303(d) list was placed in 7 public library repositories around the state and the EPA Region VII office, along with the full administrative record. In addition, the support document was placed on EPA Region VII's website. EPA received requests from the public to extend the comment period on the grounds that this matter involved a large volume of information which required more time to provide meaningful comments. EPA published another public notice on July 2, 2003 extending the original 60-day comment period for another 45-days, or until August 15, 2003.

EPA's Public Notice of May 1, 2003, requested written comment on EPA's proposed decision to do the following: (1) Add 63 waterbodies and associated pollutants of concern to Missouri's 2002 list of impaired waters; (2) identify additional pollutants for 32 waterbodies on the 2002 list.

EPA received 114 comment letters. The types of comments received by EPA ranged from opinions to submissions of water quality-related data or information. This document contains the summaries of comments EPA received during the public comment period and EPA's

responses to those comments. Because similar comments were made by multiple individuals, the responsiveness summary groups those comments accordingly and provides summary responses. A few letters of comment referenced comments that had previously been submitted to the Missouri Department of Natural Resources (MDNR) during the its public notice(s) on its proposed 2002 Section 303(d) list. As alluded to earlier, EPA had already examined Missouri's public comment record during its review of the State's 2002 Section 303(d) list submission package to determine if the State adequately responded to comment, and whether or not the State demonstrated good cause for not including on the list either waterbodies or pollutants causing impairment. Section II.G. in Enclosure 1 to EPA's April 29, 2003 decision letter to Missouri regarding the State's 303(d) list, addresses EPA's determinations with regard to the State's public comment record.

Appendix A to this Responsiveness Summary contains a list of acronyms which are replete throughout this document; Appendix B identifies those waters and/or pollutants of concern that EPA had added and/or restored to the list but are not being added to the final list based on information provided by MDNR and/or the public during EPA's public comment period; and, Appendix C is the complete Section 303(d) list which includes final revisions to Enclosure 5 to EPA's April 29, 2003 decision letter to Missouri (i.e., U.S. EPA's Consolidated 2002 Missouri 303(d) List).

Comments were received from the following individuals and entities:

1. Robert J. Brundage - Assistant General Counsel, Premium Standard Farms, Inc.
2. Deborah Neff - Attorney General's Office, Missouri Clean Water Commission
3. Dorris L. Bender - Environmental Compliance Managaer, Water Pollution Control Department, City of Independence
3. Brian Wm Marshall - Vice-President, Marshall Engineering & Surveying, Inc.
4. Albert Price
5. David A. Shorr - Lathrop & Gage Law Offices
6. Charles M. Scott - U.S. Department of the Interior, Fish & Wildlife Service
7. Suzan Franck
8. Steven W. Pagan
9. Brian D. Nieves - 98th District State Representative
10. Ralph C. Schlemper - President, Friends of Fox Creek
11. Richard Schlemper - Century Farm
12. Kevin R. Schlemper - Friends of Fox Creek
13. Mr. & Mrs. Punch Rascher
14. Terry & Darla Pabst
15. Leonard C. Duerbeck
16. Shirley Poertner
17. Steve Schwartz
18. Susan Schlemper
19. Walter Schlemper

20. James & Evelyn Sue Reed
21. Jennifer Reed
22. Emily G. Sater
23. Thomas M. Schenk
24. Bryan Sharp
25. Claire L. Schosser
26. John Miener
27. Ronald Williams
28. Laura Bissonnette
29. Julie Houdei
30. Karen Fitzsimmons
31. Len Meier - President, Greenway Network, Inc., St. Charles Community College
32. James H. Petersen, M.D.
33. James Prinsen - Prinsen Bonding & Insurance
34. Norman Beckel
35. Anonymous Letter of Support
36. Ron Tittel
37. Gerry Boehm - Greenway Network, St. Charles Community College
38. Sue Russi
39. Steve Fitzsimmons
40. Lisa Thompson
41. Larry G. Ruff
42. Leanna Zweig - Resource Scientist, Environmental Services, Missouri Dept. of Conservation
43. John D. Reece - Executive Director, Little Blue Valley Sewer District
44. Tom Kruzen - President, Ozark RiverKeepers Network
45. Lisa Martino-Taylor
46. Anonymous
47. Mark I. Bronson - Newman, Bronson & Wallis
48. Dr. Jay Hodges - Spring Creek Farm
49. Scott W. Goodin
50. Joe R. Earney - Director of Environmental Quality, Simmons
51. Cory T. Ridenhour - Executive Director, Missouri Forest Products Association
52. Paul Brockman - Co-Chairman, Peruque Creek Watershed Alliance
53. Raymond R. Grossman - Co-Chairman, Peruque Creek Watershed Alliance
54. Angel Kruzen - Sierra Club Sentinel
55. Claire L. Schosser
56. Bob Walters
57. Joyce Kelly
58. R. Otto Maly - Maly Commercial Realty, Inc.
59. Bruce J. Walker - Lansford Professor Of Leadership, University of Missouri-Columbia
60. Vicki Burton Dunscombe
61. Deelal & Kee W. Groshong
62. Jo Manhart - Available Jones

63. Jeanine Pagan
64. Heath McKay - Maly Commercial Realty, Inc.
65. Barbara Wren
66. Shara Runyan
67. Barbara Hoppe - President, Hinkson Creek Valley Neighborhood Association
68. John Hancock - Maly Commercial Realty, Inc.
69. Jack Cruise
70. James Alabach - President, TKG Management, Inc.
71. Marcus Rowe
72. Jyhmiin Lee Wang
73. Charles E. Tharp, PE - President, Environmental Dynamics, Inc.
74. Charles D. Menke
75. Janet Martin
76. Cindy Nichols
77. Ross Peterson - Secretary, TKG Management, Inc.
78. Thomas A. Trabue, P.E. - Principal, Trabue, Hansen & Hinshaw
79. Ben Y. Miller
80. Thomas T. Ratermann, General Manager, Boone County Regional Sewer District
81. Concerned Citizen
82. Sutu Forte'
83. Dee Dokken
84. Jeffrey A. Arrigo
85. Lania D. Arrigo
86. Lynda S. Baumgartner - Chair, Board of Directors/Columbia, Missouri Chamber of Commerce
87. John Kohl
88. J. Trent Stober, P.E. - President, MEC Water Resources, Inc.
89. James Czarnezki - President, Show Me Clean Streams
90. John Coffman
91. Lawrence Magliola - Missouri Stream Team member, Show-Me Clean Streams Board of Directors
92. Scott Dye - Director, WQ Monitoring & Enforcement Program, Ozark Chapter/Sierra Club
93. Thomas A. Herrmann, Chairman, Missouri Clean Water Commission, State of Missouri
94. Jim Hull - Director, Water Protection and Soil Conservation Division, State of Missouri
95. Bea Covington - Executive Director, Missouri Coalition for the Environment
96. Edward J. Heisel - Senior Law & Policy Advisor, Missouri Coalition for the Environment
97. Tracy L. Barnett
98. Rex A. Martin - State Government Relations Manager, Syngenta Crop Protection, Inc.
99. Steve Taylor - Chief Executive Officer, Environmental Resources Coalition
100. Robert J. Brundage - Missouri Ag Industries Council, Inc.
101. Kevin L. Perry - President, Regulatory Environmental Group for Missouri
102. John Lodderhose, P.E. - Assistant Director, Environmental Compliance, Metropolitan St. Louis Sewer District

103. John C. Pozzo - Supervising Engineer, Environmental Safety & Health, Ameren Services
104. Jim Kuhn - President, Home Builders Association of St. Louis
105. Franklyn W. Pogge - Director, Water Services Department/City of Kansas City, Missouri
106. No name(s)
107. Leslie Holloway - Director, State & Local Governmental Affairs, Missouri Farm Bureau Federation

## I. WATERBODY SPECIFIC COMMENTS AND RESPONSES

### Hinkson Creek

EPA received 41 comment letters regarding Hinkson Creek and EPA's decision to add this waterbody back to the Missouri 2002 Section 303(d) list. Of those, 15 letters supported listing and the remaining 26 did not support listing.

**Comments Supporting Listing**:

* Accounts of bank erosion causing loss of property and riparian corridor;
* Garbage or trash noted in the stream (e.g., blue shopping bags);
* Development has altered flow and increased runoff from paved surfaces and roofs resulting in flash flooding, accelerated deterioration or erosion of stream bank, soil loss, tree loss, and increased siltation/sedimentation in the stream;
* Pools of gasoline in creek at low water periods;
* Sparser aquatic life and diminished fishing through the years;
* A study completed by MDNR last year indicated that Hinkson Creek was impaired; however the study did not identify specific pollutant(s); MDNR is intitiating Phase 2 of this study during the Fall 2003 to identify the pollutants causing impairment;
* It is unreasonable to remove Hinkson simply because specific pollutant(s) causing impairment have not been identified at this time.

**Comments Not Supporting Listing**:

* "The Missouri Clean Water Commission (MCWC) indicated that the underlying data did not exist to substantiate the Hinkson Creek's original listing in 1998";
* "Concerned residents of Columbia and Boone County cannot address a pollutant designated as "unspecified" or "unknown". However, these citizens also expressed that they are not opposed to a listing where the data, pollutant, and analysis justify such designation, and where data properly demonstrates a specific pollutant and source of impairment, the community would actively participate in the process to bring about solutions;
* Concerns were raised about the negative impact listing will have on development in the watershed, potential regulatory impacts to wastewater treatment collection systems along Hinkson Creek, and potential regulatory burden listing could require of homeowners and business owners.

**EPA Response**: During EPA's public notice, the State provided EPA with a biological assessment report on Hinkson Creek, dated December 18, 2002. EPA believes there is basis for adding Hinkson Creek back to the list based on the following findings contained in the biological assessment report: (a) Total Taxa and EPT (Ephemeroptera (Mayflies), Plecoptera (Stoneflies), Trichoptera (Caddisflies) Taxa exhibited a sharp drop in the urbanized portion of Hinkson Creek; (b) In the Spring of 2002, stoneflies were present in samples collected from the upstream two stations, but absent at stations within the urbanized reach; (c) The Semi-quantitative Macro-invertebrate Stream Bioassessment Project Procedure found that during the Fall of 2001 the macroinvertebrate community of Hinkson Creek was partially sustaining in the upstream three sample sites and fully sustaining at the remaining five downstream sites. During the Spring of 2002, this trend was reversed; the macroinvertebrate community at the upper two stations were fully sustaining, whereas the downstream six stations were partially sustaining. Although the study did not identify specific pollutant(s), the planned second phase of MDNR's study will answer that question.

EPA is noting for the record that during MDNR's public notices of the draft 2002 Section 303(d) list, MDNR had proposed to divide the original 11-mile segment of Hinkson Creek that was listed in 1998 into two classified segments (i.e., 6 miles-WBID 1007 and 5 miles-WBID 1008). The State's public notice(s), prior to its final list submission to EPA, identified the 5-mile segment (WBID 1008) as an Addition to the list. The reduction of the original listed segment (WBID 1007) from 11-miles to 6 miles was noted as a Change. However, it was the 5-mile segment (WBID 1008) which was proposed for delisting by MDNR in the State's final submission. The original 1998 listed segment (WBID 1007), albeit reduced to 6 miles, was not accounted for in the State's final submission. It may have been the State's intention to delist the entire 11-mile segment of Hinkson Creek regardless of this bifurcation. EPA is retaining the originally listed 11-mile section of Hinkson Creek on the 2002 Missouri 303(d) list for an "unspecified" pollutant based on information contained in MDNR's Biological Assessment Report of Hinkson Creek which indicates impairment of its aquatic life use designation.

With regard to public comments critical of listing for "unspecified" or "unknown" pollutants, EPA regulations require states to identify all waters still requiring TMDLs where standards are not met or are not expected to be met through the application of controls described in 40 C.F.R. Section 130.7(b)(1). While the Act specifies that TMDLs shall be developed for pollutants, Section 303(d)(1) simply requires that certain waters be listed. The regulations do not exempt waters where the specific pollutant causing or expected to cause the exceedence of the applicable water quality standard is not known. Where either EPA's or MDNR's evaluation of data and/or information of the waterbody's designated use, numeric criteria, or narrative criteria for waterbodies, classified and unclassified, indicate impairment of the natural biological community, then the waterbody should be included on the State's 303(d) list. As such, listing for "unknown" or "unspecified" pollutants is a valid listing until such time as a specific pollutant or pollutants have been determined through additional monitoring and assessment before a TMDL is actually developed.

**Dardenne Creek**

**Comment:** EPA received letters of comment that supported EPA's action to add Dardenne Creek to Missouri's Section 303(d) list. EPA also received comment letters that did not support listing. Supporters expressed the belief that "inclusion of Dardenne Creek on the 303(d) list will provide the regulatory framework for St. Charles County residents to achieve improvements in land use along the stream and someday, restore the stream to its historic character". One letter of support pointed out, however, that while there are likely "unknown" pollutants" which cause this stream to not meet water quality standards, it is equally likely that a review of the discharge monitoring reports (DMRs) of the wastewater treatment plants would lead to designation of specific pollutants. Therefore, it was recommended that EPA consult with the St. Louis Regional Office of the Missouri Department of Natural Resources to obtain the flow and effluent discharges and properly designate the pollutants of concern in this effluent dominated stream. Non-supporters opposed inclusion of Dardenne Creek because: (a) a specific pollutant was not identified; and, (b) the data was insufficient to support listing and does not account for normal temporal or spatial variations that occur in an aquatic environment.

**EPA Response:** Although EPA regulations requires states to identify all waters still requiring TMDLs where standards are not met or are not expected to be met through the application of controls described in 40 CFR Section 130.7(b)(1), the regulations do not exempt waters where the specific pollutant causing or expected to cause the applicable water quality standard to be exceeded is not known. Prior to developing a TMDL for waters where the pollutant at issue is not yet known, the pollutant will need to be identified through additional monitoring and assessment.

With regard to the sufficiency of the data, EPA believes that the results and conclusions of MDNR's macroinvertebrate study of Dardenne Creek in the Spring of 2000, in addition to other sampling conducted by MDNR in the last 2-3 years, indicates partially sustaining or non-sustaining conditions. MDNR considers the invertebrate data to be of high quality and a direct measure of the stressors on aquatic life. Where either EPA's or MDNR's evaluation of data and/or information of the waterbody's designated use, numeric criteria, or narrative criteria for waterbodies, classified and unclassified, indicate impairment of the waterbody's designated use, numeric criteria, or narrative criteria, then the waterbody should be included on the State's 303(d) list. EPA, therefore, is retaining Dardenne Creek on the list for an "unknown pollutant".

**Mill Creek**

**Comment:** The Missouri Clean Water Commission was correct in delisting Mill Creek from the 2002 Missouri 303(d) list on the basis that USEPA guidance does not recognize habitat-loss as a pollutant. Furthermore, there is not enough relevant and timely data to warrant listing.

**EPA Response:** Mill Creek was initially listed by MDNR in 1998 due to impairment from sediment. MDNR subsequently removed sediment and replaced it with habitat-loss for the 2002 list. Ultimately, Mill Creek was delisted by Missouri because no specific pollutant was listed as the cause of impairment. No new data and/or information has been provided to EPA that supports the removal of Mill Creek from Missouri's 303(d) list. The basis for adding this waterbody back to Missouri's list is discussed in Enclosure 1 to EPA's April 29, 2003 decision letter to Missouri. Therefore, Mill Creek is being retained on Missouri's 2002 303(d) list for sediment.

**Missouri River**

**Comment:** EPA received 4 letters containing comments which opposed EPA's listing of two separate segments of Missouri River for mercury contamination based on fish tissue data retrieved from EPA's Storage & Retrieval database (STORET). The two segments are from the mouth of the Chariton River to Kansas City, and from the mouth of the Kansas River to State line. In general, it was commented that: (a) EPA did not consider all readily available Missouri River fish tissue mercury information and appears to have ignored more recent sampling data collected after 1995 showing fish tissue mercury concentrations below the 300 parts per billion (ppb) trigger level; (b) EPA may not have consistently applied fish tissue criteria relative to species of interest; (c) EPA did not apply appropriate analytical methodology; (d) EPA did not apply appropriate statistical analysis of available data; (e) Missouri has not adopted a numerical water quality standard for mercury for Human Health Protection-Fish Consumption. Therefore, EPA's methyl-mercury criterion should not be used as the basis for listing before Missouri adopts it as a State water quality standard (WQS); (f) EPA did not identify the source of the alleged mercury impairment.

**EPA Response:** As a result of EPA's public comment period, more recent Regional Ambient Fish Tissue (RAFT) monitoring data that had not been entered into STORET was located. EPA Regional Laboratory analyses of whole fish specimens (5 fish per sample) collected at locations on the Missouri River at St. Joseph and Kansas City since 1995, indicated that the Missouri Department of Health & Senior Services trigger level and EPA's Recommended Criterion of 300 ppb mercury are not exceeded. Therefore, based on the more recent data, presented in the table below, EPA is removing mercury as a pollutant of concern for the two listed segments of the Missouri River.

| Collection dates | Results |
|---|---|
| 8/9/2001 for Station #101 - Missouri River at Kansas City | 38 ppb |
| 8/21/2001 for Station #102 - Missouri River at St. Joseph | 82 ppb |
| | 75 ppb (Field Duplicate) |
| 9/10/99 for Station #6 - Missouri River at St. Joseph | 26 ppb |
| 9/13/99 for Station #7 - Missouri River at Kansas City | 44 ppb |
| | 45 ppb (Field Duplicate) |
| 10/3/97 for Station #6 - Missouri River at St. Joseph | 83 ppb |

| | |
|---|---|
| 10/1/97 for Station #7 - Missouri River at Kansas City | 83 ppb |
| | 48 ppb (Field Duplicate) |

**Blue River**

**Comment:** Benzo(a)pyrene should be removed because the data is inconclusive. A review of the Quality Assurance/Quality Control (QA/QC) data by LimnoTech revealed that the field blanks from the 1998 and 1999 USGS data collection measured concentrations of benzo(a)pyrene similar to or greater than the State's water quality criterion. In addition, replicate sample results indicated large variability, well.

**EPA Response:** EPA re-examined the QA/QC data contained in the USGS study *"Effects of Wastewater and Combined Sewer Overflows on Water Quality in the Blue River Basin, Kansas City, Missouri, and Kansas, July 1998 - October 2000"* and found that the field blanks measured concentrations of benzo(a)pyrene similar to or higher than ambient water samples, and that the replicate sample results indicated large variability as well. Such findings, which EPA had overlooked during its initial review of the Missouri 2002 Section 303(d) list, render the ambient data inconclusive. Therefore, EPA is delisting the Blue River from Missouri's 2002 Section 303(d) list for benzo(a)pyrene.

**Indian Creek**

**Comment:**

1. In one comment letter, it was requested that EPA review overall pathogen contamination in Indian Creek and recommended that EPA list this waterbody for pathogens because existing E. coli data indicates impairment of whole body contact use and a violation of Missouri's general criteria.

2. Conversely, another comment letter remarked that the data provided by the State of Kansas TMDL program, which was the basis for EPA's listing, did not include stream flow; therefore, how can it be determined if the fecal coliform concentrations were not impacted by storm flow.

3. If EPA maintains the listing, Kansas would need to modify its TMDL because its endpoint is 1,500 colonies/100 mL and Missouri's fecal coliform standard is 200 colonies/100 mL.

4. MDNR reviewed discharge monitoring report (DMR) data and found that for stations upstream of outfalls 003 and 004 from the Allied Signal facility, only one out of 75 pH measurements exceeded 9.0 units. This finding indicated a possible error in the data analysis conducted by EPA.

**EPA Response:**

1. EPA had reviewed water quality data from a monitoring station located on the Missouri/Kansas stateline. This data was derived from the Kansas TMDL which was completed for fecal coliform and approved by EPA on August 28, 2001. Kansas used the same data to determine that the portion of Indian Creek that runs through Kansas is impaired by fecal coliform. The data confirmed 16 exceedences of Missouri's numeric criterion during the recreational season. Also, the geometric means of the data were exceeded for years 1998, 1999, and 2001. EPA concluded that any reductions in coliform bacteria in Indian Creek, after crossing the stateline into Missouri, would be insignificant and, therefore, would not be expected to meet Missouri's standard of 200 colonies/100 mL.

2. Given the magnitude of the exceedences, regardless of stream flow, EPA believes that the whole body contact recreational use of Indian Creek is impaired.

3. EPA's TMDL program will coordinate with KDHE regarding any proposed reopening of the Kansas TMDL for Indian Creek to address needed modifications to the fecal coliform endpoint in order to ensure that downstream water quality criterion is met.

4. EPA originally listed Indian Creek as being impaired for pH because DMRs obtained from MDNR listed the data from Site #5 as "upstream data." MDNR commented that data which EPA reviewed did not agree with data in MDNR's possession. Upon further review of pH data provided by the Department of Energy (DOE), EPA concluded that outfalls and sampling locations were misidentified in DMRs. EPA determined that the values in exceedence of the State's pH criterion from Site #5 were not in-stream values, but were taken from water used for non-contact cooling, and not ambient stream data from Indian Creek. Furthermore, now having discounted Site #5, for the station upstream of outfalls 003 and 004, only one out of 75 pH measurements exceeded 9.0 units. Given this new information, EPA is removing pH as a cause of impairment of Indian Creek from Missouri's 303(d) list with respect to impairment for pH.

**River Des Peres**

**Comment:**

1. The dissolved oxygen (DO) data used by EPA to determine exceedences of the State's DO criterion of 5.0 mg/l was from a U.S. Geological Survey (USGS) sampling site located by Herman Park in University City. This is not a classified section of stream; therefore, the numeric standards for aquatic life do not apply. The classified section where the standard applies is approximately 12 miles downstream from the USGS sampling site;

2. Data was provided to EPA by Stream Team 1437. Stream Team 1437 monitors two sites along the southwest branch of River Des Peres which forms the north border of Ruth Park

Woods in University City in St. Louis County, Missouri. Members of Stream Team 1437 have had Level 2 QA/QC training. The data was presented in the form of a summary of macro-invertebrate sampling and water chemistry testing. According to the Stream Team 1427 summary, a poor water quality rating was given to the monitored portions of River Des Peres based on the preponderance of pollution tolerant aquatic worms and pouch snails noted during the Team's macro-invertebrate sampling conducted at both sites between 2001 and 2003. In addition, 2 out of 10, and 5 out of 10 water samples collected at Sites 1 and 2, respectively, were below the State's DO criterion of 5.0 mg/L. Based on said DO exceedences, Stream Team 1437 believes River Des Peres merits listing.

**EPA Response** 1 & 2**:** EPA is retaining River Des Peres on Missouri's 303(d) list based on 5 exceedences of the State's DO criterion derived from USGS data and 7 DO exceedences (out of 20 samples) collected by Stream Team 1437 within the unclassified segment. These exceedences demonstrate that waterbody is not meeting Missouri's General Criteria, "Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal, or aquatic life". This general criteria applies to all Missouri waterbodies.

**Cameron Lakes - No. 1, 2, and 3**

**Comment:** EPA received three comment letters which opposed EPA's addition of Cameron Lakes No. 1 and 2 to Missouri's Section 303(d) list for impairment by atrazine. It was commented that data collected by MDNR and others demonstrates that atrazine levels in these lakes have declined to the point that the lakes have attained federal and state water quality standards and EPA received such data for consideration. MDNR provided further rationale in support of their assumption that the concentrations of atrazine in the Cameron Lakes No. 1 and No. 2 should be below acceptable limits because testing has shown Lake No. 3, into which lakes No. 1 and 2 flow, is below acceptable limits.

**EPA Response:** New or previously unavailable atrazine data that was collected by MDNR, the University of Missouri-Columbia, and MEC Water Resources, Inc., was provided to EPA during the public comment period. The data demonstrates that all monitoring in Cameron Lakes #1 and #2 show annual atrazine levels well below the applicable standard of 3.0 ug/L. Data collected in 2002 and 2003 indicate that these lakes have attained the standard, with no monitoring results exceeding the applicable water quality standard during that two year period in either lake. Therefore, in light of the new data that was provided to EPA during public notice and MDNR's expanded discussion about the environmental movement and fate of atrazine, EPA now concurs with Missouri's original decision to delist Cameron Lakes No. 1 and 2. Therefore, EPA is removing Cameron Lakes No. 1 and 2 from Missouri's 303(d) list.

**Clear Creek (Vernon County), Little Drywood Creek (Vernon County), Little Osage River (Vernon County), Marmaton River (Vernon County), and North Fork Spring River (Jasper County)**

**Comment:**

1. Concerns were raised about EPA's decision to list the above 5 waterbodies over the Missouri Clean Water Commission's (MCWC) recommendation. The MCWC indicated that data did not exist to substantiate the original listing of these waters in 1998 and addressed this fallacy or listing error.

2. MDNR's comment letter stated that both the Little Osage River and Marmaton River have very low DO levels during summer low flow periods, that there are no point source discharges in the affected areas, and that there are no non-point-source contributions to the stream during times when DO is a problem. The State believes that natural physical features of this stream and its watershed are controlling DO and that it is in compliance with state standards. Furthermore, historical fish distribution studies show that Osage Plains streams have always had low fish diversity, indicating the natural level of aquatic habitat offered by these streams is poor compared to other areas of the state.

**EPA Response:**

1. EPA did not add Little Drywood Creek in Vernon County (WBID 1325) to Missouri's 2002 Section 303(d) list. EPA is retaining Clear Creek (WBID 1336) and North Fork Spring River (WBID 3188) because no new data and/or information has been provided to EPA demonstrating that these waterbodies should be removed from Missouri's 303(d) list.

2. As previously discussed in Enclosure 1 to EPA's April 29, 2003 decision letter to Missouri regarding their 303(d) list, MDNR did not provide data to demonstrate that the background values for DO are non-anthropogenic, nor modify its water quality standards to include a site specific criteria or the designated use for Marmaton River or Little Osage River. EPA, therefore, is retaining the Marmaton River and Little Osage River on Missouri's 303(d) list for low DO.

**Stinson Creek**

**Comment:** Available data are insufficient to justify listing of ammonia, biochemical oxygen demand (BOD), and non-filterable residue (NFR). Ammonia-nitrogen samples at no time exceed chronic ammonia water quality criteria for General Warm Water Fishery per 10 CSR 20-7.031-Table B. Of the 49 ammonia-nitrogen samples taken since 1991, six were above the method detection level (0.05 mg/.L NH3-N). Available ambient data indicates that Stinson Creek is not impaired. MDNR reached this conclusion and removed ammonia as a listed pollutant.

**EPA Response:** Stinson Creek was originally listed in 1994 by MDNR as impaired due to ammonia and BOD. The City of Fulton's waste water treatment plant was the identified source of impairment. Missouri removed ammonia as a pollutant of concern from Stinson Creek

in its 2002 list while retaining BOD and adding Volatile Suspended Solids (VSS). EPA added back ammonia as causing impairment of Stinson Creek because the State had not provided sufficient documentation or rationale to justify its removal. However, new data provided to EPA during the public comment period indicates no exceedences of the ammonia standard from 1993 to 2003. Therefore, EPA is removing ammonia from the list of pollutants identified as causing impairment of Stinson Creek on Missouri's 303(d) list.

**Dry Auglaize Creek**

**Comment:**

1. EPA added Dry Auglaize Creek back to Missouri's 2002 Section 303(d) list for BOD and Unknown pollutants based on biological assessment data provided by the MDNR after the list was submitted. In general, it was commented that: (a) there isn't any evidence that leads to EPA's conclusion that Dry Auglaize Creek is impaired for BOD and that instream monitoring of DO does not support BOD as a pollutant of concern; and, (b) "unknown" pollutant(s) is, at present, a more accurate way to characterize the nature of the pollutants affecting Dry Auglaize Creek.

2. A request was made that NFR be removed as a pollutant based on lack of instream NFR data, relationships established in EPA approved TMDLs, and low NFR levels in plant effluent.

3. Another comment indicated that the Dry Auglaize Creek bio-assessment report does not indicate that formal habitat assessments were conducted at any of the sampling sites, and that the application of bio-assessment protocols or draft criteria derived in wadeable perennial streams to waters with much smaller drainage areas and karst features is a questionable policy. It was further suggested that implementation of draft criteria in assessing use attainment without first addressing public participation elements described in RSMO 644.036(1) may be inappropriate.

4. If Dry Auglaize is still considered impaired, it was requested that 'low DO' replace BOD as a pollutant, 'unknown' be designated as the source, and a 'low' priority be assigned to this listing.

**EPA Response:**

1. Based on the data and information provided during EPA's public comment, EPA is not adding BOD as a pollutant causing impairment of Dry Auglaize Creek to Missouri's 303(d) list. According to 1999-2000 ambient water quality data collected by MDNR, which was provided during EPA's public comment period, 3 out of 28 DO measurements below 5.0 mg/L were observed only during low flow and 7 miles downstream of the Lebanon wastewater treatment facility (WWTF) beyond the listed segment. The WWTF produced an average effluent

$BOD_5$ concentration of 3.2 mg/L during years when wasteload allocations were conducted (1999 and 2000). Due to the low effluent concentration, MDNR staff was unable to detect measurable concentrations of carbonaceous BOD or total kjeldahl nitrogen in both plant effluent and instream samples. Specific conductance decreased approximately 100 to 200 uS/cm between monitoring stations located 5.0 and 7.0 miles downstream of the Lebanon WWTF. Concurrent reductions in DO and flow suggests that Dry Auglaize may be mixing with other sources, such as groundwater, that may be contributing to dissolved oxygen levels less than the state criterion.

2. Due to a clerical error, EPA mistakenly included NFR in Enclosure 2 (Table 1) and Enclosure 5 of Enclosure 1 to EPA's April 29, 2003 decision letter to Missouri. In addition, the biological data provided by MDNR does not mention non-filterable-residue (NFR) or objectionable bottom deposits of material in Dry Auglaize Creek. Therefore, NFR is being removed.

3. MDNR utilized a scientifically defensible approach for the biological assessment of Dry Auglaize Creek below the Lebanon WWTF. Standardized sample collection and sample analyses, quality assurance/quality control, data evaluation, and chain-of-custody procedures were conducted in accordance with the State's peer reviewed '*Semi-quantitative Macroinvertebrate Stream Bioassessment Project Procedure*'. Dry Auglaize Creek does not normally have visible flow upstream of the Lebanon WWTF, and in most seasons is an effluent dominated stream. This waterbody is also listed in the Missouri Water Quality Standards as a losing stream, which is a stream which distributes 30% or more of its flow during low flow conditions through natural processes, such as through permeable geologic materials into a bedrock aquifer within 2 miles flow distance downstream of an existing proposed discharge. Notwithstanding such unique conditions, the state's assessment protocols for wadeable perennial streams was considered by MDNR's Environmental Services Program to be a reasonable match for Dry Auglaize Creek. This is readily available and existing data which EPA cannot ignore.

4. Impairment is still evident based on the overall results of MDNR's biological assessment. Analyses of data indicated that Dry Auglaize Creek had impaired macroinvertebrate communities with biological ratings in both seasons as partially sustaining and non-sustaining. If the Lebanon WWTF is not the source of impairment, as previously assumed, there are apparently other unknown sources which may be causing impairment. The landcover in the hydrologic unit where the Dry Auglaize Creek sampling stations are located has higher urban grassland percentages than elsewhere in the Ozark/Osage Ecological Drainage Unit. Both urban and livestock influences could be contributing to the partial or biologically non-sustaining rating of this waterbody. EPA is removing BOD as a pollutant of concern, but EPA is keeping Dry Auglaize Creek on Missouri's 303(d) list as impaired from "unknown" pollutants.

**Sewer Branch**

**Comment:** Sewer Branch was placed on the list for low DO levels in an unclassified section well upstream of the classified portion. EPA also listed for "unknown pollutants" based

on observations by MDNR that there were no invertebrates upstream or downstream of Hubbard Park combined sewer overflow (CSO). This point is in the extreme upper portion of the watershed, with the stream being an unclassified first order stream at this point, meaning it rarely carries water and would be expected to have few if any aquatic animals. EPA apparently considered the lack of invertebrates as proof of water quality problem.

**EPA Response:** EPA acknowledges and agrees with the inference made by the commenter that a lack of invertebrates in a first order stream, which rarely carries water, is not proof of a water quality problem. However, the DO levels in 5 out of 20 samples collected above and below the Sedalia wastewater treatment plant located on Sewer Branch, were below 5 mg/L, Missouri's DO water quality standard. This demonstrates that this waterbody is not meeting Missouri's General Criteria which applies to all waterbodies in Missouri, and states that "Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal, or aquatic life". EPA, therefore, is retaining Sewer Branch on Missouri's 303(d) list for low DO.

**Bear Creek (WBID 9000), Deepwater Creek (WBID 1215), Flat Creek (WBID 3593), Hinkson Creek (WBID 1007 and 1008), Hubble Creek (WBID2197)**

**Comment:** The State's delisting of the Bear Creek, Deepwater Creek, Flat Creek, Hubble Creek, Hinkson Creek was appropriate. The Missouri Clean Water Commission intentionally excluded these streams from its approved list because the data available were inadequate to justify inclusion, and discrete pollutants have not been identified. Therefore, these waters should be removed from Missouri's 2002 Section 303(d) list.

**EPA Response:** Bear Creek, Deepwater Creek, Flat Creek, and Hubble Creek were not included on any previous EPA-approved State 303(d) list. Although the State had considered proposing these waters for the 2002 Section 303(d) list, they were not on the State's final submission to EPA. Therefore, the State erroneously identified these unlisted waters as delisted.

**Heath's-Hess Creek, Pettis County** (WBID 848 and 849).)

**Comment**: MDNR's biological assessment data from 2001 on Heath's-Hess Creek indicates compliance with State water quality standards, and Stream Condition Index Scores indicate fully supported designated uses in 3 out of 4 sampling dates. The watershed for Heath's Creek-Hess has less crop and more grass and forest land than other streams in the area. Heath's-Hess Creek is proposed to be included as a reference stream in the next revision of Missouri Water Quality Standards.

**EPA Response**: New data and information presented by MDNR during EPA's public comment period indicates that Heath's-Hess Creek is meeting the State's water quality standards. EPA concurs with the State's request to remove Heath's-Hess Creek from Missouri's 303(d) list.

**Mississippi River** (Lead/zinc impaired 5-mile segment)

**Comment:** EPA received several comments that supported the State's inclusion of the 5-mile segment of the Mississippi River below Herculaneum for lead/zinc. EPA was urged to limit recreational use (i.e., swimming and fishing) in this area and to conduct further testing to identify other contaminants of concern, and to account for the bioaccumulative and synergistic effects of less than toxic but still elevated levels of other heavy metals. Also, concerns were raised regarding plans to contain the toxic waste pile and Doe Run's culpability in polluting the river.

**EPA Response:** EPA acknowledges comments supporting the State's listing of the 5-mile segment of the Mississippi River below Herculaneum and will forward these concerns or recommendations to the appropriate EPA and State programs which are working on resolving the environmental issues associated with the Herculaneum site.

**MDNR Listings Not Addressed by EPA Public Notice**

**Comment:**

1. MDNR's August 27, 2002 submission of the Missouri 2002 Section 303(d) list identified the following 6 waters for delisting. Documentation for these State-delisted waters are included in the State's support document and accompanying data files. EPA did not either list, or agree to delist, these waters:

| | |
|---|---|
| W. Fork Niangua (BOD, VSS) | Mark Twain Lake (atrazine) |
| Long Branch Lake (cyanazine) | N. Moreau Creek (BOD, VSS) |
| Eleven Point River (chlorine) | Clear Creek (at Monett - BOD, VSS) |

2. The following waters apparently are proposed for listing by EPA, but did not appear on Enclosure 5 of EPA's Decision Support Document:

| Waterbody | WBID | Size | Pollutant/Condition |
|---|---|---|---|
| Osage River | 1031 | 0.4 mi | Habitat Loss |
| Salt River | 91 | 29 mi | Low DO |
| Salt River | 103 | 10 mi | Low DO |

**EPA Response:**

1. EPA interprets this first comment to mean that the 6 named waterbodies were not accounted for in EPA's Decision Support Document, or, that EPA had not indicated whether or not it was approving the State's delisting of those waterbodies. (a) EPA approved Missouri's delisting of the W. Fork Niangua but omitted including it in Enclosure 3 to EPA's April 29, 2003

decision letter to Missouri; (b) While EPA concurs with MDNR's removal of atrazine as a pollutant of concern from Mark Twain Lake and the removal of cyanazine from Long Branch Lake, these waterbodies are still listed by the State for mercury, and therefore, are not delisted waterbodies; (c) Mark Twain Lake and Long Branch Lake are accounted for in Enclosure 5 to EPA's April 29, 2003 decision letter to Missouri; (d) N. Moreau Creek, Eleven Point River, and Clear Creek are waters for which TMDLs have been established and approved by EPA. EPA recognizes that states are not currently required to include on their 303(d) lists waterbodies for which TMDLs have been established, but EPA included these waterbodies in Enclosure 5 to EPA's April 29, 2003 decision letter to Missouri to account for the fact that TMDLs have been established for those waterbodies.

2. EPA did not propose adding the Osage River (WBID 1031), Salt River (WBID 91) and Salt River (WBID 103) to the Missouri 2002 Section 303(d) list.

## II. THE 26 WATERBODIES (CONSENT DECREE - ATTACHMENT B WATERS)

### Background

On February 27, 2001, EPA entered into a Consent Decree with the American Canoe Association, et al. As a term of the consent decree, EPA agreed to review Missouri's 2002 Section 303(d) list to determine whether 26 previously identified waterbodies (i.e., Attachment B waters) are included on the final 2002 List. If not included, EPA agreed to determine whether these waterbodies and pollutants need to be included on the final EPA approved list. EPA and MDNR entered into a Memorandum of Understanding (MOU) in which MDNR agreed to monitor the 26 waterbodies. EPA committed to provide waterbody-specific rationales justifying the omission of any of the 26 waterbodies. MDNR first provided EPA with a monitoring report for these 26 waterbodies on March 22, 2002 and a final revised report on September 4, 2002, in response to EPA's request for more information.

Since Missouri's final 2002 Section 303(d) list did not include any of the 26 waterbodies, EPA was compelled to review the information contained in MDNR's final revised monitoring report on the 26 waterbodies and other clarifying information (e.g., Visual/Benthic Survey field sheets for 13 of the 26 waterbodies) to determine whether some or all of these waterbodies should be included. As a result of EPA's review of the available and existing data and information provided by MDNR, EPA added 13 of the 26 waterbodies to Missouri's 2002 Section 303(d) list. Of the remaining waterbodies, 8 were not added, and data for 3 waterbodies were deemed insufficient for EPA to determine whether or not they are impaired. Two waterbodies from the list were previously addressed elsewhere in EPA's April 29, 2003 decision letter to Missouri regarding their 303(d) list. These waterbodies are Sewer Branch (Pettis County) and Locust Creek (Chariton to Putnam County).

Because EPA disapproved the omission of specifically named waterbodies, EPA put out for public notice and comment an amendment to Missouri's 2002 Section 303(d) list that includes the waterbodies and pollutants added by EPA. EPA received the following comments regarding the listing of those waterbodies:

**General Comments Regarding EPA's Evaluation of Consent Decree Waterbodies**:

**Comment:**

1. Three letters of comment that EPA received regarding the listing of 13 out of the 26 Attachment B waters, contended that EPA's Community Tolerance Index (CTI) is fundamentally flawed. Commenters said the single metric approach is not appropriate and only considers tolerance, and does not consider relative abundance among tolerance groups, as do other tolerance based metrics. MDNR's Visual/Benthic reference key is not an appropriate level of taxonomic resolution to impose accurate tolerance values. The Visual/Benthic Surveys provided a rapid and inexpensive method for screening large numbers of waterbodies for obvious water quality problems and to determine where more intensive monitoring is needed. Visual/Benthic Surveys consist of small amounts of chemical data, qualitative sampling of invertebrates or fish, and visual observations of streams, and therefore, are Level One data, according to the State's 2002 Listing Methodology. MDNR uses only Level Two or higher data to list waterbodies. The impairment scoring cut-off value of 6.5 was not explained by EPA and appears to be arbitrary. The Visual/Benthic Survey lacks proper QA/QC. EPA was quoted as having said in earlier correspondence with the State that "it was not clear whether or not benthic macro-invertebrates and fish are being identified at the survey sites by a qualified taxonomist, with samples verified in the lab with appropriate changes made for misidentification. One commenter added that it believes the differences of CTI values between waterbodies on either side of the 6.5 cutoff value are insignificant and that the CTI values are contradictory to the stated evaluation for determining the quality of the flow in a stream and is, therefore, not a valid application of the testing data.

2. One commenter asserted that the visual/benthic surveys do not indicate impairment. For instance, EPA's justification for listing waters include: "large amounts of algae" (commonly occurs in even pristine streams due to edaphic and hydrologic variables); "slight turbidity" (this occurs in all streams including the most pristine streams in the state); "elevated conductance" (is a measure of dissolved solids, but no exceedence of the state total dissolved solids (TDS) or sulfate + chloride standard data was provided); and "reduced aquatic diversity" (East Honey Creek and Sandy Creek were placed on the list for poor aquatic diversity but McCarty Creek, which had virtually the same aquatic life, was not listed because EPA judged it had acceptable AQL diversity).

3. It was asserted that EPA made several decisions regarding attainment of Missouri's general water quality criteria based on observations made by MDNR field personnel that cannot be supported by any factual evidence or measurements, and that other specific waterbody

decisions to list streams appear not to be indicated based on information in MDNR's visual benthic survey sheets.

4. The Consent Decree and the subsequent Memorandum of Understanding between EPA and MDNR, wherein "MDNR agreed to monitor twenty-six waters in accordance with the Interim Monitoring Plan . . ." makes no mention of inclusion or exclusion of these 26 waterbodies in the 303(d) list. Neither the Consent Decree nor the MOU require mandatory listing of these 26 waterbodies, as implied by the statement in Enclosure 1 at Paragraph III-A to EPA's Decision Support Document.

**EPA Response:**

1. In response to overall comments regarding the level of data and the CTI, EPA believes that additional information provided to EPA by MDNR (e.g., field survey sheets and chemical data collected by MDNR staff) during EPA's review of Missouri's list, enhanced the characterization of those selected waterbodies. This enabled EPA to make a more informed judgement regarding impairment. Further, EPA believes that the methods which were utilized to assess the available data on the Consent Decree/Attachment B Waters (i.e., 26 Waterbodies) were appropriate. Information and data that factored into EPA's listing decision included available chemical data, the reported presence of Darters and/or Madtoms, or an average CTI value of less than 6.5. When biologist talk about classifying aquatic life based on pollution tolerance, three groups are recognized: (a) pollution tolerant species at the higher end of the 1-10 scale; (b) pollution intolerant species at the lower end of the scale; and, (c) facultative species, which are species that are able to exist under more than one set of conditions, and therefore fall in between pollutant tolerant and intolerant species. The range of values for each group was established by dividing the 1-10 tolerance scale into thirds. The pollution tolerant species fall approximately within the upper one-third (i.e., greater than 6.5), and the facultative and less pollution tolerant species would fall within the lower two-thirds range of the scale. This approach was taken to be conservative and to ensure that waterbodies would be protected. Quantitative data, in addition to the qualitative data that was available, could have potentially provided more resolution than that provided by taxa lists and other information contained in MDNR's Visual/Benthic Survey. However, simple presence/absence of qualitative data can be utilized to separate streams sites into an impaired, partially impaired, and unimpaired classification [1] [2]. It should be noted that 3 of the 5 metrics suggested in EPA's benthic macro

[1]Cowles, L. and N.H. Crisp. February 1988. Water quality and Chironomidea Communities of Dry Turkey Creek Below the McPerson, Kansas Wastewater Treatment Plant and Bull Creek in McPherson, Kansas Below the National Cooperative Refinery Association Wastewater Lagoon. Activity Number ECF40. Environmental Services Division, EPA Region VII, Kansas City, Kansas.

[2]Ferrington, L.C., Jr. and N.H. Crisp, 1989. Water Chemistry Characteristics of Receiving Streams And the Occurrence of Chironomus riparius and other Chironomidae in Kansas. Acta Biol. Debr. Oecol. Hung. 3: 115-126.

invertebrate protocols[3] can be expressed qualitatively as the number of taxa. EPA reviewed a number of sources in selecting the tolerance values that were utilized in determining impairment or non-impairment. These sources were listed in Enclosure 1 to EPA's April 29, 2003 decision letter to Missouri regarding their 303(d) list. Not all authors are in agreement on tolerance values. However, EPA reconciled differences by seeking the advice of an unbiased expert, Leonard C. Ferrington, Jr., PhD, Department of Entomology, University of Minnesota, and former Associate Director, Kansas Biological Survey, on the appropriateness of the tolerance values.

2. EPA disagrees with the comment that the visual/benthic surveys do not indicate impairment. In general, impairment was ascribed to waters where either actual chemical data or combination or cumulation of factors such as "large amounts of algae" (which EPA believes carries considerable weight in visually determining impairment), along with elevated conductance and turbidity, and "reduced aquatic diversity" indicate impairment. With regard to a commenter's comparison of McCarty Creek (WBID 13378), East Honey Creek (WBID 555), and Sandy Creek (WBID 652), to further support their argument that the visual/benthic surveys do not indicate impairment, EPA has the following response:

a. McCarty Creek (WBID 1338) - No Visual/Benthic survey form was provided to EPA. However, chemical monitoring data collected by MDNR, and included in their revised "Monitoring Report on the 26 Waters", indicated compliance with Missouri's water quality standards. This coincides with the summary of aquatic life present in the stream which appears to indicate good overall stream health. Accordingly, EPA did not add McCarty Creek to the Missouri's 303(d) list.

b. East Honey Creek (WBID 555) - As presented in Enclosure 1 to EPA's April 29, 2003 decision letter to Missouri regarding their 303(d) list, a combination of factors led to EPA's conclusion that this waterbody was impaired. For instance, the State's "Monitoring Report on 26 Waters" describe specific conductance was slightly high when compared to streams in the same region and with similar drainage and discharge. Furthermore, minor growth of epilithic, filamentous algae was noted by the state and the water was slightly turbid. The state has concluded in its comparative notes that the slightly elevated conductivity levels and minor algal growth suggest that nutrients are entering the stream. However, EPA found during it review of public comments that it had overlooked a visual/benthic survey form which was available during its original review of the State's 303(d) list. EPA, therefore, calculated the average tolerance value of taxa report at the monitoring site for this waterbody. The average tolerance value of the taxa reported at the monitoring site for this waterbody indicates a CTI value of 6.3 which falls below the 6.5 cut-off value. Consequently, EPA is removing East Honey Creek from the Missouri 2002 Section 303(d) list.

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[3]U.S. EPA. July 1999. Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers - Periphyton, Benthic, macroinvertebrates, andFish. 2nd Edition. EPA 841-B-99-002.

c. Sandy Creek (WBID 652) - Notwithstanding that 11 types of aquatic invertebrates were noted during MDNR's visual/benthic survey, the presence of pollution tolerant chironomids (blood worms) and the calculated average tolerance value of 7.1, coupled with a reported specific conductance (1250umhos), (which is high compared to streams in the same region with similar drainage and discharge) indicates impairment of the aquatic life use of this waterbody. As such, EPA is retaining Sandy Creek on Missouri's 303(d) list for "unknown" pollutants.

3. EPA 's decision to list 13 of the 26 waterbodies was based on factual evidence or measurements contained or reported in MDNR's final revised '*Monitoring Report on 26 Waterbodies'* and the available visual/benthic survey sheets.

4. EPA agrees with the comment that neither the Consent Decree nor the MOU require mandatory listing of these 26 waterbodies on the 303(d) list. However, if available data and information supported listing, EPA added the waterbody to the list.

**East Fork Locust Creek, Sullivan County** (WBID 608)

**Comment:**

1. DO data contained in DMRs from Premium Standard Farms (PSF) indicates less than 10 percent of the DO samples are below the state's 5.0 mg/L DO criterion.

2. MDNR's *'Monitoring Report on 26 Waters'* states that new (water quality based) effluent limits have been imposed to correct the Milan WWTF discharge and that the city plans to construct a mechanical wastewater treatment plant to meet the new water quality based limits.

3. "The monitored DO data are from a site north of Milan and upstream of the discharge from the Milan wastewater lagoon, while the evaluated data for color and suspended materials are from sites downstream of the Milan discharge. Therefore, it is appropriate to consider these two sources of data as describing two different waterbodies.".

**EPA Response:**

1. Based on the additional DO monitoring data provided to EPA, EPA is removing East Fork Locust Creek for low DO because the data demonstrate no violations of the state's DO criterion.

2. EPA was aware of MDNR's statement regarding new effluent limits being imposed on Milan's WWTF. However, the new permit was not in place during the listing cycle, or prior to EPA's public comment period. The new water quality based effluent permit limits, through the issuance of the new permit became effective on October 3, 2003. The City of Milan is now under a compliance schedule to meet these new water quality based permit limits. Therefore, on

the basis that "states are not required to list water quality limited segments still requiring TMDLs where effluent limitations required by the CWA, more stringent effluent limitations required by local, state, or federal authority are enough to implement any water quality standard applicable to such waterbodies", EPA is not adding East Fork Locust Creek (WBID 608) to Missouri's 303(d) list.

3. EPA disagrees with the commenter's conclusion that it is appropriate to consider the monitored DO data and the evaluated data as describing two different waterbodies. According to Missouri's Water Quality Standards regulation, East Fork Locust Creek is divided into two segments, one that is from the mouth of East Fork Locust Creek to Highway 6, and the second is from Highway 6 to Section 12, Township 64N, Range 20 West. Three of the four sites visited by MDNR were within the same segment. The chemical data and the biological information, with the exception of one site were collected within the same segment, and therefore, those data can be used together to make a decision regarding impairment.

**East Honey Creek, Mercer County** (WBID 555)

**Comment:**

1. There was disagreement with EPA's interpretation of Missouri's general criteria and EPA's listing of this water based upon minor algal growth, slightly turbid water, and slightly elevated conductivity levels. "Slight turbidity" does not constitute a violation of Missouri's general criteria, rather the criteria specifies that water be free from "unsightly turbidity".

.2 Also, the commenter inferred from the presence of darters that this waterbody is not impaired.

**EPA Response:**

1. Missouri's general criteria states that "waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses."

2. While considering the public comment, EPA located a visual/benthic field survey sheet that had been overlooked during EPA's initial evaluation. EPA calculated the average tolerance value of the taxa reported at the monitoring site for this waterbody. The average tolerance value was determined to be 6.3, which is below the CTI 6.5 cutoff value. Therefore, based on this evaluation of the visual/benthic survey data, EPA is removing East Honey Creek (WBID 555) from the Missouri 2002 Section 303(d) list.

**Hickory Creek, Daviess County** (WBID 442)

**Comment:** In MDNR's visual/benthic survey forms, algae is described as extensive at one site but minor at the other two sites. Further, there does not appear to be any supporting data or information suggesting that there is a condition in Hickory Creek that could result in toxicity to human, animal, or aquatic life, and there is no indication that the natural biological community has been impaired. Finally, rocks darkened by manganese is more likely caused by manganese entering the stream in a reduced form, then being oxidized in a fashion similar to iron, not by the occurrence of diurnal oxygen sags.

**EPA Response:** No new data and/or information has been provided to EPA to support the removal of Hickory Creek (WBID 442) from Missouri's 303(d) list. The basis for adding this waterbody back to Missouri's list is discussed in Enclosure 1 to EPA's April 29, 2003 decision letter to Missouri. EPA is retaining Hickory Creek (WBID 442) on Missouri's 303(d) list for an "unknown" pollutant.

**Hickory Creek, Gundy County** (WBID 588 & 589)

**Comment:** The observation that the "amount of benthic algae (as) being greater than two other nearby streams . . ." is a logical certainty and does not support EPA's conclusion regarding bottom deposits. Further, according to MDNR's '*Monitoring Report on 26 Waters'* "no observable problems were noted" and the "diversity of aquatic invertebrate community acceptable for a small prairie stream.

**EPA Response:** No new data and/or information has been provided to EPA to support the removal of Hickory Creek (WBID 588 & 589) from Missouri's 303(d) list. The basis for adding this waterbody back to Missouri's list is discussed in Enclosure 1 to EPA's April 29, 2003 decision letter to Missouri. EPA is retaining Hickory Creek (WBID 588 & 589) on Missouri's 303(d) list for an "unknown" pollutant.

**Long Branch Creek, Linn County** (WBID 602)

**Comment:** A request was made by one commenter to remove Long Branch from the 303(d) list because two of the three sites visited contained darter species.

**EPA Response:** EPA's review of the data on Long Branch (WBID 602) does not support the claim that two of the three sites visited contains darters. The presence of bloodworms and anoxic sediments at site 4 are clear indications of impairment. As stated in EPA's Decision Support Document, a CTI of 7.5 for the uppermost stream segment and 6.75 at the next downstream segment, based on data from MDNR's visual/benthic low flow survey conducted on 7/17/2000, indicates an impaired biological community. Long Branch Creek (WBID 602) is being retained on Missouri's 303(d) list for an "unknown" pollutant.

**Muddy Creek, Mercer County** (WBID 557)

**Comment:**

1. Muddy Creek should not be considered impaired because of the presence of darter species; or, at least the middle section, where sampling occurred, should not be listed.

2. MDNR's field sheets and written report describe algae as "sparse" and "minor" at two of the three sites assessed, and the statement that darkening of rocks due to manganese (precipitation) caused by low dissolved oxygen is more likely related to manganese entering the stream in a reduced form, and then being oxidized.

**EPA Response:**

1. EPA cannot sub-segment waters to adjust impairment decisions. EPA must consider the segment of Muddy Creek as defined in the State's water quality standard regulation.

2. No new data and/or information has been provided to EPA to support the removal of Muddy Creek (WBID 557) from Missouri's 303(d) list. The basis for adding Muddy Creek is discussed in Enclosure 1 to EPA's April 29, 2003 decision letter to Missouri. EPA is retaining Muddy Creek (WBID 557) on Missouri's 303(d) list for an "unknown" pollutant.

**Sandy Creek, Putnam County** (WBID 652)

**Comment:** The single site assessed contained a greater taxa richness than the stream used a a reference stream (11 taxa compared with 8 taxa). Based on general flaws in using a tolerance index based on Level One data, Sandy Creek should not be added to the Missouri 303(d) list.

**EPA Response:** The presence of pollution tolerant chronomids (blood worms) and a calculated average tolerance value of 7.1 indicates that Sandy Creek is impaired. With regard to comments regarding the CTI, see EPA's response starting on page 18 of this document. EPA is retaining Sandy Creek (WBID 652) on the Missouri' 303(d) list for an "unknown" pollutant.

**West Fork Locust Creek, Linn & Sullivan County** (WBID 612, 613)

**Comment:** West Fork Locust Creek was proposed for listing without specific basis. MDNR's '*Monitoring Report on 26 Waters'* indicates that any impairment is likely caused by the channelized nature of the stream bed coupled with soft sediment substrate.

**EPA Response:** The aquatic invertebrate survey at the two sites indicated the presence of thirteen types of aquatic invertebrates at Site 1 and eight types at Site 2. Despite the absence of physical or chemical data, the visual/benthic survey of aquatic invertebrates cited the presence

of pollution tolerant chironomids (blood worms) at both sites and a calculated average tolerance value of 7.0 at the monitoring site located 2.5 miles west of Browning indicates that West Fork of Locust Creek is impaired. EPA is retaining West Fork Locust Creek (WBID 612, 613) on the Missouri's 303(d) list for an "unknown" pollutant.

**Willow Branch (possibly N. Blackbird Creek), Putnam County** (Unclassified)

**Comment:**

1. Willow Branch should be excluded from the 303(d) list because it is not classified and has no beneficial use. Since it has no beneficial use, it cannot fail to meet that standard.

2. Willow Branch should not be added to the Missouri 303(d) list based on the general flaws in using a Community Tolerance Index (CTI) based on Level One data.

3. A Commenter noted that in a letter from EPA to MDNR, dated January 25, 2002, EPA had indicated there was "no impact noted" for Willow Branch and that EPA expressed confusion over who conducted the biological monitoring.

4. All aquatic indicators were favorable and the stream and bed were apparently free from algae.

**EPA Response:**

1. When there is existing and readily available water quality related data or information indicating that a narrative criterion is being violated, EPA or MDNR can list a water. Narrative criteria apply to all waters of the state, classified and unclassified.

2. See page 18 for EPA's response to comments regarding the CTI.

3. In a letter from EPA to MDNR, dated January 25, 2002, EPA commented on the adequacy of MDNR's '*Monitoring Report on 26 Waters'*, EPA noted that Willow Branch did not have an impairment rating. MDNR's final revised report received by EPA on September 6, 2002, did not include an impairment rating for Willow Branch. EPA's observation was not an "admission" (or concurrence) of "no impact". As far as EPA's initial confusion about who conducted the biological surveys, that question was satisfactorily addressed by MDNR in its final revised *'Monitoring Report on 26 Waters'*.

4. A re-examination of the available data indicated that while the presence of some aquatic indicators suggests that Willow Branch is not impaired, there was also evidence of impairment. The average tolerance value of the taxa encountered was 7.1, which is an indication of impairment. Additionally, the stream survey form indicates that epipelic filamentous algae with 2 to 12 inch long strands cover 25 to 75 percent of the substrate, further evidence of

impairment. EPA, therefore, is retaining Willow Branch on the Missouri's 303(d) list for an "unknown" pollutant.

**Bear Creek, Adair County** (Unclassified)

**Comment:** Bear Creek should not be listed because it is not a classified stream and does not have any designated beneficial uses. Therefore, Bear Creek cannot fail to meet that standard.

**EPA Response:** When there is existing and readily available water quality related data or information indicating that a narrative criterion is being violated, EPA or MDNR can list a water. Narrative criteria apply to all waters of the state, classified and unclassified. The information presented for Bear Creek, demonstrates that the biological community is being impacted; and, a link can be made to the general criteria at 10CSR7(3)(D) and (G). EPA is retaining Bear Creek on Missouri's 303(d) list for an "unknown" pollutant.

## III. GENERAL COMMENTS

### Designation of Categories of Impaired Waterbodies

**Comment:** There is no authority for designation of "categories" of impaired waterbodies in Section 303(d) of the Clean Water Act; moreover, despite such lack of authority, the Missouri Clean Water Commission nevertheless had categorically delisted certain waters (i.e., Category Two and Four Waters) and included only waterbodies in Categories One and Three.

**EPA Response:** 40 CFR 130.7, as proposed, included a four-part list requirement which the State included in its 2002 listing methodology. However, this proposed change to the existing regulation, which was to have become effective on April 30, 2003, was withdrawn as of April 18, 2003. There is no language in the currently effective regulation which requires or prohibits a four-part list. As it stands, the currently effective regulations under 130.7 for implementing Section 303(d) of the Clean Water Act require each State to assemble and evaluate all existing and readily available water quality related data and information to develop its list of water quality limited segments still requiring TMDLs. There is no specific statutory or regulatory language governing the format in which the State must submit its list. Thus, States have considerable latitude when it comes to describing how lists will be constructed, as long as they adequately consider the existing and readily available data and information and appropriately identify waters required to be listed. In addition, although EPA generally reviews and comments on State listing methodologies, EPA does not approve or disapprove those methodologies.

The format in which the State submits its list is not relevant to EPA's review and approval/disapproval action. EPA reviewed the portion of Missouri's submission identified as the Section 303(d) list to ensure the State complied with the requirements of the Clean Water Act and EPA's regulations. The State's Section 303(d) list consisted primarily of Category One

waterbodies (i.e., either numeric water quality criteria for one or more discrete pollutants which causes the water to be rated as "partial attainment" or "non-attainment", or observed water quality conditions are judged to exceed state narrative water quality criteria). The State's list also identified Category Three waterbodies (i.e., waters for which a TMDL has been established and approved by EPA). Part Two waterbodies (i.e., waters for which no specific discrete pollutant is listed as the cause of impairment) were considered to be excluded from the Section 303(d) list, and in some cases EPA disapproved Missouri's failure to list such waters.

**Unknown Pollutants**

**Comment:** EPA received several comments regarding listing of waters for "unknown" pollutants. In general, it was commented that if the pollutant is undefined or unknown, then how can a TMDL be prepared for an "unknown" pollutant; or, if we don't know the pollutant, then we don't know that a particular effluent limit won't be adequate to attain state water quality standard goals.

**EPA Response:** The regulations do not exempt waters where the specific pollutant causing or expected to cause the exceedence of the applicable standard is not known. While the Act specifies that TMDLs shall be developed for pollutants, Section 303(d)(1) simply requires that certain waters be listed. Prior to developing a TMDL for waters where the pollutant at issue is not yet known, the pollutant will need to be identified. Concerns about the lack of a discrete pollutant will be addressed through additional monitoring and assessment before a TMDL is actually developed.

**Unclassified and No-Designated Beneficial Use Waters**

**Comment:** Unclassified and no-designated beneficial use waters cannot fail to meet state water quality standards. Unclassified waters, not included in Table H of Missouri regulations at 10 CSR 20-7.031, that have no designated beneficial uses, cannot be included in the 2002 303(d) list unless its inclusion is specifically approved by the Missouri Clean Water Commission. Reference was made to EPA's Decision Support Document, dated April 29, 2003, wherein the Agency says that the list required by Section 303(d)(1) of the Clean Water Act must contain any waters for which particular effluent limitations will not be adequate to attain the state's water quality standards goals, or for which existing technology based controls are not stringent enough to attain or maintain water quality standards.

**EPA Response:** While Section 303(d)(1) specifically addresses waters for which existing technology based controls are not stringent enough to attain or maintain water quality standards, the scope of what can be listed is broader under 130.7(b)(3) of the federal Water Quality Standards Regulation (40 CFR Part 130) where it says that "for purposes of listing waters under 130.7(b), the term "water quality standard applicable to such waters" and "applicable water quality standards" refer to those water quality standards established under section 303 of the Act, including numeric criteria, narrative criteria, waterbody uses, and antidegradation requirements.

The state's General Criteria under 10 CSR 20-7031 are applicable to all waters of the state at all times including mixing zones.

**Reference Streams Listed for Sediment**

**Comment**: 13 of the sediment listed streams are higher quality reference streams and should be delisted.

**EPA Response**: MDNR provided data during EPA's public comment period demonstrating that 13 of the sediment impaired waterbodies, that were added back to the 2002 list by EPA, are not impaired by sediment. MDNR considers these waterbodies to be least impacted and representative of some of the best available aquatic biological reference conditions in the state. For 10 of these waterbodies, reference stream reaches are imbedded within the larger listed segments, hence the entire listed segment is a "reference stream". However, for 3 waterbodies, the reference reach is immediately upstream of those listed segments. Therefore, MDNR conducted a statistical comparison of biological and sediment estimation data between listed segments and the unlisted reference reaches immediately upstream and found there was no significant difference in biological data between the reference reach and listed segment. In addition, there was no statistically significant difference between the estimation of soil loss between watersheds that were considered impaired for sediment and those that were considered as reference.

Based on data provided by MDNR during the public comment period, EPA is removing the following stream segments for sediment from Missouri's 303(d) list:

| | |
|---|---|
| West Fork Big Creek (WBID 449) | Grindstone Creek (WBID 502) |
| Little Drywood Creek (WBID 1325) | Spring Creek (WBID 657) |
| East Fork Grand River (WBID 457) | Honey Creek (WBID 337) |
| Locust Creek (WBID 606) | Long Branch (WBID 339) |
| Marrowbone Creek (WBID 508) | White Cloud Creek (WBID 345) |
| East Fork Crooked Creek (WBID 372) | North River (WBID 81) |

Although sediment has been removed from West Fork Locust Creek (WBID 612), this segment is retained on Missouri's 303(d) list for "unknown" pollutants.

**Restoration of Sediment Impaired Waters to 303(d) List**

**Comment:** EPA received several comments critical of EPA's restoration of waters to the Missouri 2002 Section 303(d) list that were originally listed in 1998 for "sediment" and subsequently removed from the 2002 list by the Missouri Clean Water Commission after MDNR had converted "sediment" to "habitat loss" in order to account for the larger more complex habitat problems in these streams. In summary, commenters indicated that:

1. There was no documented evidence or quantitative sediment data to support listing, and that the basis for sediment listings were fish studies and not specific data.

2. There is no federal or state water quality standard for sediment, and that these listed stream segments should be maintained by category as threatened in the 305(b) report, not placed on the 303(d) list.

3. The original listing and process in 1998 were flawed/erroneous.

**EPA Response**:

1. With the exception of the 13 reference streams, no new data and/or information has been provided to EPA demonstrating that the remaining sediment listed waterbodies are not impaired by sediment. The basis for adding these waters back to Missouri's list is discussed in Enclosure 1 to EPA's April 29, 2003 decision letter to Missouri.

2. The absence of state/federal water quality criterion, such as sediment, does not preclude listing of a waterbody as impaired by that pollutant if data and/or information demonstrates that a particular pollutant is impairing the waterbody's designated use. With the exception of the reference streams, previously identified, which EPA is removing, EPA is retaining the remaining sediment listed waters on Missouri's 303(d) list.

3. The 1998 listing process is completed. Comments concerning the process that led to the State's final EPA approved 1998 Section 303(d) list are beyond the scope of EPA's public notice.

**Use of Dissolved Oxygen (DO) Data and Interpretation of DO Standards**

**Comment**: For several streams, EPA has used DO values less than 5.0 mg/L as evidence of water quality impairments and has ignored provisions in Missouri Water Quality Standards that allow lower DO Values if they are part of the natural DO profile. EPA's rationale is that Missouri's current DO standard is incorrect, thus EPA is allowed to use some undefined DO standard of the Agency's own choosing. In the absence of a duly promulgated DO standard, the State's current DO criterion should be used.

**EPA Response:** EPA is not suggesting that Missouri's current DO standard is incorrect, nor is EPA ignoring the provisions in Missouri's water quality standards that allow for the DO concentration to drop below 5.0 mg/L within the normal profile of the stream. However, EPA cannot find a statement within the State's water quality standards that allows for daily DO sags. Missouri's water quality standards states the following about DO: "Water contaminants shall not cause the total dissolved oxygen to be lower than the levels described in Table A or as indicated in paragraph, (4)(A)3"; In turn, 4(A)3 states that "When upstream concentrations of dissolved oxygen are below the criteria, wasteload allocations and permits for point source dischargers will

be developed so that natural dissolved oxygen concentrations, as determined on a regional or watershed basis, are maintained.

**Pollutant Name Change: Volatile Suspended Solids (VSS) or Non-VSS (NVSS) to Non-Filterable Residue (NFR) or Sediment**

**Comment**: MDNR provided documentation to support the State's pollutant name change from "NFR or Sediment" to "VSS or NVSS" for 30 water segments. The documentation from which this information was derived came in the form of visual benthic survey field data sheets.

**EPA Response**: EPA disapproved this pollutant name change on the basis that MDNR had not provided any data that supported a discrete pollutant name change. As such, EPA added the applicable pollutant (i.e., NFR or sediment) back to 22 waterbodies which EPA had identified in Table 3 of Enclosure 2 to EPA's April 29, 2003 decision letter to Missouri regarding their 303(d) list. EPA reviewed the field survey data sheets which were provided by MDNR during EPA's public comment period and agree that the description of benthic conditions described therein more clearly demonstrate which portion (i.e., VSS or NVSS) of total sediment is the problem. Based on this documentation EPA is making the following revisions to Missouri's 303(d) list.

| **Change Sediment to NVSS** | **Change NFR to VSS** | **Change Sediment to NVSS & VSS** |
|---|---|---|
| Village Creek (2864) | Walnut Creek (1339) | Little Beaver Creek (1529) |
| Shaw Branch (2170) | Straight Fork (959) | |
| Flat River Creek (2168) | Turkey Creek (3282) | |
| Big River (2080) | Little Lindley Creek (1438) | |
| Indian Camp Creek (212) | Piper Creek (1444) | |
| Pond Fork (2128) | Stockton Branch (1361) | |
| Shibboleth Branch (2120 | Spring Creek (1870) | |
| Rocky Fork (1014) | W. Fork Sni-a-bar Creek (400) | |
| Dog Creek (510) | Big Bottom Creek (1746) | |
| Bynum Creek (709) | Brushy Creek (1592) | |
| Elkhorn Creek (189) | | |

As for the remaining 8 out of the 30 waterbodies which had visual benthic field data sheets EPA had: (a) previously approved the listing of VSS for Main Ditch, Stinson Creek, Red Oak Creek, two tributaries to Red Oak Creek, and Brush Creek (WBID 1371); (b) previously approved the delisting of the West Fork Niagnua River; and, (c) previously identified North Moreau Creek in EPA's Consolidated list as a Category 3 waterbody for which a TMDL was established and approved by EPA.

**Consistent Listing of Pollutants in Boundary Waters**

**Comment**: EPA's discussion addressing the listing of pollutants in the Missouri and Mississippi Rivers by boundary states in 1998 implies an inadequate submittal by MDNR. MDNR contacted appropriate boundary states (Tennessee, Illinois, Nebraska, Kansas, and Kentucky), summarized available listing information from them, and evaluated the differences between their listing and Missouri's listing.

**EPA Response:** EPA acknowledges MDNR's review efforts on the boundary state pollutant listings of the Missouri and Mississippi Rivers and the accuracy of the State's conclusion. The Consent Decree compelled EPA to conduct a thorough review of the State's decision not to add boundary state pollutants. While EPA and MDNR arrived at the same conclusion, EPA wanted to demonstrate to the Plaintiffs that we did a thorough review of what the State provided, as well as, additional information collected by EPA.

## IV. COMMENTS BEYOND THE SCOPE OF EPA'S PUBLIC NOTICE

EPA received a number of comments concerning waters and pollutants, and/or other concerns, that were beyond the scope of what EPA was soliciting comment on in its public notice. EPA's public notice specifically requested written comments on EPA's proposed decisions to add and/or restore specific waters and pollutants to Missouri's 2002 Section 303(d) list. EPA cannot take any new actions or make changes to the list in response to those comments because the public was not given an opportunity to comment on those items during EPA's public comment period. Therefore, EPA will forward these comments to Missouri for consideration during the State's development of the 2004 Section 303(d) list.

Although EPA cannot take any new action in response to such comments, the Agency would like to summarize and provide some responses to these comments.

**Kit Creek**

**Comment**:

1. EPA received 17 comment letters expressing concern about pollutants in the streambed caused by discharges from the Victoria Gardens Mobile Home Park (MHP) Waste WWTF and the impact on human health, livestock, and the environment. Commenters cited the Victoria Gardens MHP WWTF as the primary source of impairment based on its long history of violations of the NPDES permit limits for Biological Oxygen Demand (BOD) and suspended solids, fecal coliform, possible nitrate contamination, and other chemicals from treatment plant discharges. Concerns were raised about the lack of a de-chlorination provision in the WWTF's permit of treated wastewater prior to discharge and the adverse effect that would have on aquatic life.

2. Commenters were disappointed about Kit Creek not having been designated as a Class C, Limited Warm Water Fishery stream by MDNR.

3. Notwithstanding present and future efforts to bring the Victoria Gardens MHP WWTF into compliance, there are still concerns about contaminants remaining in the streambed due to years of residue build-up from the WWTF.

**EPA Response**:

1. EPA's basis for excluding Kit Creek from the 303(d) list is documented in Enclosure 1 to EPA's April 29, 2003 decision letter to Missouri. EPA is not adding Kit Creek back to Missouri's list because Franklin County PWSD #3 is under a schedule to comply with final effluent limitations at the WWTF. Some dates on the original schedule of compliance have been extended until October 31, 2004 by MDNR in response to a request from Franklin County PWSD #3 for additional time to study the proper solution for meeting the discharge permit total residual chlorine (TRC) limit of .01 mg/l. MDNR issued a public notice proposing a modification to the existing permit. If chlorination is elected over ultra-violet treatment, MDNR will require de-chlorination thereby eliminating the toxicity concern for aquatic life in Kit Creek. If ultra-violet treatment is chosen, then the need to de-chlorinate is moot.

2. Regarding comments seeking designation of Kit Creek as a Class C, Limited Warm Water Fishery, EPA intends to encourage the State to complete the process for appropriately classifying this waterbody.

3. With respect to the residue buildup concerns in Kit Creek, the CWA contains no provision that gives EPA or the state authority to clean up or compel the WWTF to clean up previously deposited residue from the WWTF serving the Victoria Gardens MHP. After improvements have been made to the operation of the WWTF, in accordance with the compliance schedule, residue in the stream may still continue to exhibit elevated BOD for a while, but this will improve in time as the organic material degrades and becomes an inert solid, and/or flushes out during rainfall events.

**Peruque Creek**

**Comment:** In general, objections were raised to MDNR's listing of Peruque Creek based on an opinion that data was lacking or insufficient, and that existing data is potentially unreliable. Sedimentation problems in Lake St. Louis at the mouth of Peruque Creek doesn't mean that the upstream waters do not meet water quality standards. Alternately, another letter of comment requested that the 2002 listings of Peruque Creek (4 miles of #217 and 8.5 miles of #218) be approved for continuing study, observation, testing, and corrective implementation.

**EPA Response:** EPA approved MDNR's decision to list Peruque Creek.

**Osage River**

**Comment:** Two comment letters supported EPA's action not to include the Osage River on the 303(d) List for low DO for the following reasons: (a) DO is not a pollutant; and, (b) summer low flow DO levels are natural background and that these rivers are in compliance with State water quality standards. Two other letters recommended that EPA include the lower Osage River, below Bagnell Dam, on the 303(d) list as impaired due to low DO, fish trauma, and sediment. Data from the Missouri Department of Conservation (MDC) and Ameren UE studies indicate DO levels less than 5 mg/L for 10 miles below the dam during some minimum flow scenarios and less than 5 mg/L for almost 70 miles below the dam during summer high flow generation. In addition MDC has documented numerous fish kills during 2002 and 2003. Photos taken by MDC and an Ameren UE evidently indicate erosion problems along the Osage River.

**EPA Response:** EPA approved the State's decision to add mercury impairment to the Osage River, but did not add any other pollutants of concern.

**Blue River**

**Comment:**

1. EPA received a comment that it should review information from Resource Conservation Recovery Act (RCRA) facility remedial field investigations (RFI) report along the Blue River to determine other reasons for impairment. The lower segment flows through a heavily industrialized area in which years of runoff of toxic sediments have resulted in an almost total lack of aquatic life. There was also mention of Missouri Department of Conservation electroshock sampling conducted in 1978, 1979, and 1980 which revealed that there were "no fish observed" and further noted that "the water had a milky color and a foul odor.

2. EPA should review pathogen contamination of the Blue River and add it to the 303(d) list as not meeting water quality standards due to the presence of pathogens which preclude whole body contact recreation and for not meeting the general criteria standards. EPA did not consider the overall level of pathogens in this waterbody because the presence of human excreta would indicate that there is a high level of pathogens.

**EPA Response:**

1. EPA had proposed listing the Blue River as impaired by benzo(a)pyrene based on data contained in the USGS study entitled *'Effects of Wastewater and Combined Sewer Overflows on Water Quality in the Blue River Basin, Kansas City, Missouri, and Kansas, July 1998-October 2000'* and did not add other pollutants of concern to this waterbody for public notice. Therefore, commenters recommendation that "EPA 7 review results of RCRA facility RFIs investigations" reports to determine other "reasons" (i.e., pollutants) for impairment of the Blue River, besides benzo(a)pyrene, is beyond the scope of EPA's Public Notice.

2. EPA did not identify E. coli as a cause of impairment for the Blue River. Therefore, the recommendation that EPA should review pathogen contamination of the Blue River and add it to the 303(d) list as not meeting water quality standards is beyond the scope of EPA's public notice.

**River Des Peres**

**Comment:**

1. The state's omission of WBC use designation for the River Des Peres is a violation of Section 101 of the federal Clean Water Act, which requires that all waterbodies must meet standards designed to be supportive of aquatic life and whole body contact recreation, unless a Use Attainability Analysis (UAA) has been conducted. No UAA has been done. The commenter found it curious that EPA would not apply the fecal coliform criterion to this waterbody, since it legally, and in fact, is a whole body contact recreation stream (used by children and adults for this purpose). The commenter further expressed a continuing concern that "existing uses" - in particular WBC or "primary contact" recreation have not been considered by EPA Region 7 nor the Missouri Clean Water Commission.

2. EPA should consider the overall level of pathogens in this waterbody. The presence of human excreta would indicate there is a high level of pathogens. EPA should review pathogen contamination of this stream, added River Des Peres to the 303(d) list as not meeting water quality standards due to the presence of pathogens which preclude whole body contact recreation and for not meeting the general criteria standards.

**EPA Response:**

1. The comment that "existing uses", particularly whole body contact recreation, have not been considered by EPA and the Missouri Clean Water Commission is a water quality standards issue that falls outside the scope of the EPA's Public Notice requesting written comments on EPA's proposed action to add or add back certain waterbodies and pollutants to the State's list. Any modification made to the designated use of the River Des Peres will need to be addressed through the Water Quality Standards program under Section 303(c) of the Clean Water Act and the implementing federal regulations at 40 CFR Sections 131.20, 131.21, and 131.22.

2. EPA proposed adding River Des Peres for low DO; therefore the comment recommending the addition of "pathogens" is beyond the scope of EPA's public notice.

**Brush Creek**

**Comment**:

1. It was commented that the presence of human excreta in Brush Creek would indicate that there is a high level of pathogens. It was requested/recommended that EPA review existing pathogen contamination for Brush Creek and that this waterbody be added to the 303(d) list as not meeting water quality standards due to the presence of pathogens which preclude whole body contact recreation and for not meeting the general criteria standards.

2. Another commenter expressed surprise and concern that Brush Creek is not a "classified waterbody" and that without an waterbody ID number, it is as if this stream doesn't exist. It is hoped that this non-classification is just an oversight and that the State of Missouri will classify this Brush Creek.

**EPA Response**:

1. EPA did not add any pollutant of concern to Brush Creek for public comment. Therefore, this request to include pathogens is beyond the scope of EPA's public notice.

2. The comment regarding classification of Brush Creek is a water quality standards issue that is beyond the scope of the EPA's Public Notice. Any modification made to Brush Creek in terms of classification will need to be appropriately addressed through the Water Quality Standards program under Section 303(c) of the Clean Water Act and the implementing federal regulations at 40 CFR Sections 131.20, 131.21, and 131.22.

**James River**

**Comment:** It was commented that the presence of human excreta in the James River would indicate that there is a high level of pathogens. It was requested/recommended that EPA review existing pathogen contamination for the James River and that this waterbody be added to the 303(d) list as not meeting water quality standards due to the presence of pathogens which preclude whole body contact recreation and for not meeting the general criteria standards;

**EPA Response:** EPA did not propose adding the James River to the Missouri 303(d) list. Therefore, this request to review and add pathogens is beyond the scope of EPA's public notice.

**LaBelle No. 2 lake, Monroe Route J Lake, Lewistown Reservoir, Vandalia Lake, and Edina Reservoir**

**Comment:** Data collected at all of the above named lakes and associated public water supplies (PWS) through a voluntary monitoring program (VMP) administered by Syngenta Crop

Protection, Inc., showed that annual means have been below the Maximum Contaminant Level (MCL) for atrazine for the 1996-1999 period, and that the Safe Drinking Water Act (SDWA) monthly average of samples for these public water supplies (PWS) have been below the MCL for atrazine. In addition the VMP data indicated the following:

a. In Labelle No. 2 Lake, the data showed no atrazine annual average above the maximum contaminant level (MCL) in either raw water or finished water from 1996 through August 22, 2001.

b. In Monroe City Route J Lake, although some individual samples were above 3.0 ppb, the raw water mean for atrazine was 2.78 ppb during the period 1994 through 1999, and the mean from January to August 2001 was below the MCL.

c. In Lewistown Reservoir, all samples analyzed from 1996 through 2000 were non-detections.

d. In Vandalia Lake, while some individual samples were above 3.0 ppb since 1996, all finished water annual means were below the MCL including year-to-date through August 22, 2001; and,

e. In Edina Reservoir, some individual samples were above 3.0 ppb since 1996, but all finished water annual means were below the MCL including the year-to-date mean in 2001.

**EPA Response:** EPA approved MDNR's listing of these 5 lakes and reservoirs.

**Stinson Creek**

**Comment:** This stream is presently listed as having BOD problems (which translates into low DO) below the Fulton WWTF. In was commented that, according to water quality monitoring data collected by MDNR and EPA since the early 90s indicates, early morning DO levels during low flow conditions were measured upstream and downstream of the Fulton WWTF discharge. On 5 of the 7 occasions, DO was higher, which leads to the conclusion that the typical downstream DO condition either maintains or improves the normal DO profile of the stream upstream of the outfall, and is thus in conformance with state water quality standards.

**EPA Response:** EPA approved Missouri's listing of Stinson Creek for BOD and VSS.

**Cave Springs Branch**

**Comment**: The State of Oklahoma has slated Cave Springs Branch for removal from its 303(d) list based on consistent effluent quality from the Simmons Food plant. This small, effluent dominated, intermittent stream has 0.2 miles in Missouri and more than 3 miles in

Oklahoma. The question was raised if EPA would also allow removal of Cave Springs Branch from the Missouri 303(d) list so as to be consistent with Oklahoma. Simmons had provided data and information to both Oklahoma and Missouri.

**EPA Response**: Missouri did not remove Cave Springs Branch from the State's 2002 list, nor did EPA make any any change to Missouri's list regarding this waterbody.

**Jack's Fork River**

**Comment**: Through enforcement by MDNR and improved operation, the City of Emminence WWTF, which is the sole point source for fecal coliform within the listed segment, now meets its permit standards. Data demonstrates that the cause of impairment has been corrected. Residual fecal coliform will naturally abate provided plant performance continues. Limited excursions above the water quality standard should not be interpreted to constitute impairment because EPA draft guidance recommends using both the geometric mean and single sample maximum components when assessing and determining attainment of waters designated for primary contact recreation. Fecal coliform should not be used since it is not a direct indication of what will cause impact to public health, and the correlation between between coliform concentrations and sources of pathogens is not always reliable. EPA's 2002 *'Consolidated Assessment and Listing Methodology'* says that impairment from fecal coliform is indicated when the geometric mean is exceeded or more than 10% of samples exceed single sample maximum. None of the median values, according to USGS data, exceed the fecal coliform criterion of 200 colonies/100 mL, and when examining all the data available for the entire reach of the River (all sampling locations), it appears that neither the geometric mean nor 10% of data points exceed the 200 colonies/100 mL.

**EPA Response**: Missouri's final 2002 Section 303(d) list included seven miles of the Jacks's Fork. EPA approved Missouri's inclusion of this waterbody on their 2002 list. EPA will forward this public comment to Missouri for consideration during the 2004 listing cycle.

**Little Blue River**

**Comment**: EPA received two letters during public notice which included comments opposing MDNR's listing of the Little Blue River for mercury. Written comments previously submitted by the City of Independence and the Little Blue Valley Sewer District to MDNR regarding the State's proposed listing of the Little Blue were incorporated into its comment letter for EPA's consideration.

**EPA Response**: Missouri included Little Blue River on its EPA approved 2002 Section 303(d) list. The Little Blue was among 40 waters which the State added to their list because the mercury value in fish tissue for Largemouth Bass exceeded the Missouri Department of Health and Senior Services (MDHSS) advisory level and EPA's recommended criterion limit of the 0.3 mg/kg. Documentation of mercury levels in fish were provided to support this listing.

**East Fork Tebo Creek**

**Comment**: East Fork Tebo Creek is listed for pH due to the Triple Tipple abandoned mine land (AML) area. When the stream was placed on the draft 2002 list, there were 2 out of 14 pH observations that were less than the State's 6.5 standard, for an exceedence rate of 14 percent. Additional pH observations made since the State submitted its final 2002 Section 303(d) list indicate no exceedences. This drops the exceedence rate of total samples to 7 percent. As MDNR no longer considers this stream to be impaired by pH, EPA is requested to delete this stream from the 2002 Section 303(d) list.

**EPA Reponse**: MDNR included E. Fk. Tebo Creek for pH on their EPA approved 2002 list. MDNR may propose the removal of this waterbody from their 2004 303(d) list.

**Indian Camp Creek**

**Comment**: The stream is listed for NVSS from soil erosion and ammonia from leachate at the JZ landfill. A study in 1994 found high ammonia in the stream due to leachate seeps during low flow conditions. The stream has been sampled three times since 2000 during low flows upstream of the landfill and at Hwy J, 0.3 miles downstream of the landfill, and no detectable ammonia has been found. It was requested that ammonia be eliminated as a pollutant on this stream.

**EPA Response**: MDNR included ammonia as a pollutant causing impairment of Indian Camp Creek on it's 2002 Section 303(d) list, and EPA approved this inclusion. MDNR may propose the removal of this waterbody from their 2004 303(d) list.

**Fellows Lake, Greene County**

**Comment**: Staff from City Utilities of Springfield has noted that in the past 20 years, Fellows Lake has had only one taste and odor event. Based on these findings, it was requested that nutrients be deleted as a 303(d) pollutant for Fellows Lake.

**EPA Response**: Missouri identified nutrients as a pollutant causing impairment of Fellows Lake on its 2002 Section 303(d) list, and EPA approved this inclusion. MDNR may propose the removal of this waterbody from their 2004 303(d) list.

**Little Muddy Creek, Pettis County**

**Comment:** MDNR and EPA neglected to list Muddy Creek for impairment based on objectionable color which is a violation of the State's general criteria. The segment from the point where it receives effluent from Tyson to its mouth should be listed as impaired by "unknown pollutant" from Tyson. Documentation, in the form of visual surveys, was provided that describes such impairment. Documentation indicates substantial visible contrast between

the point immediately upstream of the Tyson Branch and immediately below it for 100 percent of the observations. Unsightly or objectionable red color dominates the stream below where it receives effluent from the Tyson plant located in Dresden, Missouri and persisting to the mouth of the Little Muddy Creek approximately 1-mile downstream. MDNR has photo documentation.

**EPA Response:** EPA acknowledges the information provided by this commenter. However, because EPA did not add this waterbody to Missouri's 2002 Section 303(d) list, these comments are beyond the scope of EPA's public notice. EPA will forward this comment to MDNR for consideration while preparing the State's 2004 list.

**Missouri and Mississippi Rivers - State's removal of "Habitat Loss"**

**Comment:** There is no scientific or legal basis for removing the Missouri and Mississippi Rivers from the 303(d) list for biological impairments (i.e., habitat loss), or rather, for EPA to uphold the Missouri Clean Water Commission's delisting (or removal of "habitat loss") of these two rivers because it could not identify a discrete "pollutant" as the cause of impairment. The "alleged" requirement to identify a specific pollutant has been met because rock dikes, riprap, and bank revetments all constitute "pollutants" under the Clean Water Act. There is extensive evidence showing that such structures have impaired these waterbodies. These waterbodies are impaired by sediment deposits, which constitute a "pollutant" under the Clean Water Act. Extensive literature demonstrates the impaired status of the Missouri and Mississippi Rivers. It was argued that the Missouri and Mississippi Rivers do not meet Missouri Water Quality Standards in terms of meeting beneficial uses (Protecting aquatic life, habitat for wildlife), general criteria (bottom deposits & biological community), and specific criteria (solids & biocriteria).

**EPA Response:** In addition to data and/or information regarding border states pollutants and other data available through EPA accessible databases, EPA considered the materials used by Missouri to support the 1998 listing of the Missouri and Mississippi River. EPA reviewed these materials to determine whether or not pollutants, which have not otherwise been identified, are being discharged resulting in the loss of habitat. The information that EPA reviewed on the Missouri River supports the conclusion that the placement of dams in the upper river, as well as channelization, bank stabilization and channel control structure placement, and maintenance in the lower river have resulted in habitat loss. However, although such physical changes and modifications on the river have adversely impacted aquatic life habitat, none of the reviewed information indicated the habitat loss to be the result of discharges of a pollutant. For the Upper Mississippi River, the information contained in documents reviewed by EPA supported the conclusion that the placement of locks and dams on the river above St. Louis, as well as channelization, bank stabilization and channel control structure placement and maintenance in the river below St. Louis has resulted in habitat loss. The installation of locks and dams, and the placement and maintenance of river control structures has modified the manner in which the river manages or distributes its sediment load and flow throughout the channel and across its floodplain. The loss of aquatic and semi-aquatic habitat is a response to changes in river

hydrology and geomorphology brought on by these control structures. However, there was no information reviewed which identified the discharge of s pollutant, including sediment, as the cause of aquatic life use impairment in this portion of the Mississippi River.

Appendix A

List of Acronyms

AML - Abandoned Mine Land
AQL - Aquatic Life
BOD - Biological Oxygen Demand
CFR - Code of Federal Regulations
CSO - Combined Sewer Overflow
CTI - Community Tolerance Index
CWA - Clean Water Act
DO - Dissolved Oxygen
EPT (Taxa) - Epherneroptera, Plecoptera, and Trichoptera (count)
DMR - Discharge Monitoring Report
MCL - Maximum Contaminant Level
MCWC - Missouri Clean Water Commission
MDNR - Missouri Department of Natural Resources
MDC - Missouri Department of Conservation
MDHSS - Missouri Department of Health and Senior Services
MOU - Memorandum of Understanding
NFR - Nonfilterable Residue
NPS - Nonpoint Source (pollution)
NVSS - Non Volatile Suspended Solids
PWSD - Public Water Supply District
ppb - Parts Per Billion
QA/QC - Quality Assurance/Quality Control
RAFT - Regional Ambient Fish Tissue (monitoring)
RCRA - Resource Conservation & Recovery Act
STORET - Storage & Retrieval System (database)
TDS - Total Dissolved Solid
TMDL - Total Maximum Daily Load
TRC - Total Residual Chlorine
USGS - U.S. Geological Survey
UAA - Use Attainability Analysis
VMP - Voluntary Monitoring Program
VSS - Volatile Suspended Solids
WBID - Waterbody Identification (#)
WQS - Water Quality Standard
WWTF - Wastewater Treatment Facility
WQLS - Water Quality Limited Segment

**Amended Decisions to Missouri's 2002 303(d) List**

EPA is making the following revisions to its April 23, 2003 decision regarding Missouri's 303 (d) list.

## I. Sediment Listed Streams

EPA had added back (i.e., restored) 34 waterbodies to Missouri's 303(d) list. These waterbodies had been delisted by the Missouri Clean Water Commission after MDNR had changed the impairment from "sediment" to "habitat loss" for the 2002 list. EPA disapproved the pollutant name change and restored "sediment" as the cause of impairment. In addition, EPA restored "sediment" as the cause of impairment to four other waterbodies which were still on Missouri's 303(d) list. However, documentation provided by the State during EPA's public comment period demonstrated that 12 of the 38 waterbodies are higher quality reference streams. Therefore, EPA is revising its decision and removing 12 waterbodies from Missouri's list, and removing sediment as a pollutant from another waterbody.

EPA is making the following revisions:

| Waterbody Name | WBID | Pollutant | Revision |
|---|---|---|---|
| White Cloud Creek | 345 | Sediment | Delist |
| East Crooked Creek | 372 | Sediment | Delist |
| E. Fk. Grand River | 457 | Sediment | Delist |
| Grindstone Creek | 502 | Sediment | Delist |
| Honey Creek | 337 | Sediment | Delist |
| L. Drywood Cr | 1325 | Sediment | Delist |
| Locust Creek | 606 | Sediment | Delist |
| Marrowbone Creek | 508 | Sediment | Delist |
| North River | 81 | Sediment | Delist |
| Spring Creek | 657 | Sediment | Delist |
| W. Fork Big Creek | 449 | Sediment | Delist |
| Long Branch | 339 | Sediment | Delist |
| W. Fk. Locust Creek | 612 | Sedminent, Unknown | Remove Sediment |

## II. Consent Decree Waterbodies

EPA had added 13 of the 26 Consent Decree waterbodies (Attachment B Waters). Of these 13 waters, EPA is removing the following 2 waterbodies from the 303(d) list.

| Waterbody Name | WBID | Pollutant | Revision |
|---|---|---|---|
| E. Honey Creek | 555 | Unknown | Delist |
| E. Fk. Locust Creek | 608 | DO, Unknown | Delist |

## III. Other Revisions

Based on data and information provided by the State and the public during EPA's public notice, EPA is delisting or removing pollutants from the following:

| Waterbody Name | WBID | Pollutant | Revision |
|---|---|---|---|
| Blue River | 417 | Benzo(a)Pyrene | Delist |
| Cameron Lake 1 | 7120 | Atrazine | Delist |
| Cameron Lake 2 | 7121 | Atrazine | Delist |
| Heath's-Hess Creek | 848,849 | Unknown | Delist |
| Indian Creek | 420 | pH, Fecal Coliform | Remove pH |
| Stinson Creek | 710 | Ammonia, BOD, VSS | Remove ammonia |
| Dry Auglaize | 1145 | BOD, NFR, Unknown | Remove BOD, NFR |
| Missouri River | 356 | Chlordane, PCBs, Mercury | Remove Mercury |
| Missouri River | 226 | Chlordane, PCBs, Mercury | Remove Mercury |

## IV. "NFR or Sediment" to "VSS or NVSS" Pollutant Name Change

EPA had disapproved the State's pollutant name change for 22 waterbodies from "NFR or Sediment" to "VSS or NVSS" on the basis that MDNR had not provided any data that supported a discrete pollutant name change. As such, EPA added the applicable pollutant (i.e., NFR or Sediment) back to those 22 waterbodies. EPA reviewed the field data provided by MDNR during EPA's public notice and agrees the additional information more clearly demonstrates which portion of total sediment is the problem and which is not. Based on the State's documentation EPA is making the following revisions:

| Change Sediment to NVSS | Change NFR to VSS | Change Sediment to NVSS & VSS |
|---|---|---|
| Village Creek (2864) | Walnut Creek (1339) | Little Beaver Creek (1529) |
| Shaw Branch (2170) | Straight Fork (959) | |
| Flat River Creek (2168) | Turkey Creek (3282) | |
| Big River (2080) | Little Lindley Creek (1438) | |
| Indian Camp Creek (212) | Piper Creek (1444) | |
| Pond Fork (2128) | Stockton Branch (1361) | |
| Shibboleth Branch (2120) | Spring Creek (1870) | |
| Rocky Fork (1014) | W. Fork Sni-a-bar Creek (400) | |
| Dog Creek (510) | Big Bottom Creek (1746) | |
| Bynum Creek (709) | Brushy Creek (1592) | |
| Elkhorn Creek (189) | | |

Appendix C

## Revised US EPA Consolidated 2002 Missouri 303(d) List

| S | Year | C | 2002W BID | Waterbody | Size | Units | Pollutant | Source | Downstream | Upstream | Dcounty | Ucounty | Priority for Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C | 1994 | 1 | 9000 | Barker's Cr. Trib. | 0.3 | Mi | pH, sulfate | Grey AML | NE28,42N,24W | SE21,42N,24W | Henry | | M |
| | | | | Bear Cr. | | | Unknown *2 | | | | | | |
| A | 2002 | 1 | 7186 | Ben Branch Lake | 45 | Ac | Mercury | Atmospheric Deposition | 14,44N,8W | | Osage | | M |
| A | 2002 | 1 | 7109 | Bethany Res. | 78 | Ac | Mercury | Atmospheric Deposition | SE27,64N,28W | | Harrison | | M |
| C | 1998 | 1 | 1746 | Big Bottom Cr. | 0.5 | Mi | BOD, **[VSS] <NFR>** *3, **6** | Lake Forest Subdivision | NE36,38N,7E | SE36,38N,7E | Ste. Genevieve | | H |
| C | 1998 | 1 | 2916 | Big Cr. | 4 | Mi | Metals | Glover Lead Smelter | NE27,32N,3E | SW2,32N,3E | Iron | | H |
| | 1998 | 2 | 1250 | Big Cr | 49 | Mi | [Sediment] *1,3 | Ag NPS | | | Henry | | H |
| | | | 436 | Big Muddy Cr | | | [Sediment] *1,3 | | | | | | H |
| C | 1998 | 1 | 1224 | Big Otter Cr. | 1 | Mi | pH | Otter Creek AML | C29,40N,25W | NE31,40N,25W | Henry | | M |
| | 1998 | 1 | 1225 | Big Otter Cr. Trib. | 1 | Mi | pH | Otter Creek AML | NE31,40N,25W | N5,39N,25W | Henry | St. Clair | M |
| | 1998 | 1 | 2074 | Big R. | 53 | Mi | Lead | Old Lead Belt AML | NW18,43N,4E | 3166,40N,3E | Jefferson | | H |
| C | 1994 | 1 | 2080 | Big R. | 40 | Mi | Lead, **[NVSS] <Sediment>** *3, **6** | Old Lead Belt AML | 3166,40N,3E | 33,37N,4E | St. Francois | | H |
| C | 1998 | 1 | 3250 | Big Sugar Cr. | 31 | Mi | Nutrients | Livestock Production | SW34,22N,32W | 27,21N,29W | McDonald | Barry | L |
| A | 2002 | 1 | 2769 | Black R. | 45 | Mi | Mercury | Atmospheric Deposition | State Line | 16,25N,6E | Butler | | M |
| | 1998 | 2 | 653 | Blackbird Cr | 10.5 | Mi | [Sediment] *1,3 | Ag NPS | | | Adair | | H |
| C | 1998 | 3 | 417 | Blue R. | 4 | Mi | Chlordane | Urban NPS | SW20,50N,32W | 1,49N,33W | Jackson | | M |
| **D** | | 1 | 417 | Blue R. | | | [Benzo(A)pyrene] *4, **6** | | | | | | L |
| C | 1998 | 3 | 418 | Blue R. | 9 | Mi | Chlordane | Urban NPS | 1,49N,33W | 36,49N,33W | Jackson | | M |
| C | 1998 | 3 | 419 | Blue R. | 9 | Mi | Chlordane | Urban NPS | 31,49N,32W | SE28,48N,33W | Jackson | | M |
| C | 1998 | 3 | 421 | Blue R. | 2 | Mi | Chlordane | Urban NPS | SE28,48N,33W | E4,47N,33W | Jackson | | M |

| S | Year | C | 2002W BID | Waterbody | Size | Units | Pollutant | Source | Downstream | Upstream | Dcounty | Ucounty | Priority for Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 2002 | 1 | 7370 | Bluestem Lake | 15 | Ac | Mercury | Atmospheric Deposition | 22,47N,31W | | Jackson | | M |
| A | 2002 | 1 | 2034 | Bourbeuse R. | 132 | Mi | Mercury | Atmospheric Deposition | mouth | 4,39N,6W | Franklin | Phelps | M |
| A | 2002 | 1 | 1371 | Brush Cr. | 0.2 | Mi | BOD,VSS | Humansville WWTP | SW16,35N,24W | SW16,35N,24W | Polk | | H |
| | 1994 | 3 | 859 | Brushy Cr. Fk | 1 | Mi | BOD, NFR, Ammonia *5 | Sedalia WWTP | | | Pettis | | L |
| C | 1998 | 1 | 1592 | Brushy Cr. | 0.4 | Mi | BOD, **[VSS] <NFR>** *3, **6** | Houston WWTP | NE6,30N,9W | NE6,30N,9W | Texas | | H |
| C | 1998 | 1 | 3269 | Buffalo Cr. | 10 | Mi | Nutrients | Livestock Production | NW9,22N,34W | 5,23N,33W | McDonald | | L |
| C | 1998 | 1 | 3273 | Buffalo Cr. | 5.5 | Mi | Nutrients | Livestock Production | 5,23N,33W | 14,24N,33W | McDonald | | L |
| | 1994 | 1 | 3118 | Buffalo Ditch | 3 | Mi | BOD | Kennett WWTP | NE26,18N,9E | C14,18N,9E | Dunklin | | H |
| C | 1998 | 1 | 709 | Bynum Cr. | 0.3 | Mi | **[NVSS]<Sediment>** *3, **6** | Auxvasse Stone Quarry | S34,49N,9W | S34,49N,9W | Callaway | | L |
| **D** | 1998 | | 7120 | Cameron Lake No. 1 | 25 | Acre | Atrazine *1, **6** | Corn,sorghum production | | | Dekalb | | H |
| **D** | 1998 | | 7121 | Cameron Lake No. 2 | 35 | Acre | Atrazine *1, **6** | Corn, sorghum production | | | Dekalb | | H |
| C | 1998 | 1 | 9000 | Cave Spring Br. | 0.2 | Mi | Nutrients | Simmons Ind.,Livestock | W21,21N,34W | W21,21N,34W | McDonald | | H |
| C | 1994 | 3 | 737 | Cedar Cr. | 4 | Mi | pH, Sulfate *5 | Cedar Creek AML | N34,49N,11W | C15,49N,11W | Callaway | | H |
| -- | | 1 | | Cedar Cr. | 1 | Mi | Sulfate | Manacle Creek AML | W10,48N,11W | SW3,48N,11W | Callaway | | M |
| C | 1994 | 1 | 3203 | Center Cr. | 11 | Mi | Zinc | Tristate AML | W14,28N,34W | W5,28N,32W | Jasper | | M |
| | 1998 | 2 | 1336 | Clear Creek | 18 | Mi | [Sediment] *1,3 | Ag NPS | | | Vernon | | H |
| C | 1998 | 1 | 3239 | Clear Cr. | 3 | Mi | Nutrients | Monett WWTP | 28,26N,28W | 36,26N,28W | Lawrence | | H |
| | | 3 | | Clear Cr. | | | Ammonia, BOD, NFR *5 | | | | | | |
| A | 2002 | 1 | 7326 | Clearwater Res. | 1650 | Acre | Mercury | Atmospheric Deposition | NE6,28N,3E | | Wayne | | M |
| A | 2002 | 1 | 7090 | Cooley Lake | 300 | Acre | Mercury | Atmospheric Deposition | SE2,51N,30W | | Clay | | M |

| S | Year | C | 2002W BID | Waterbody | Size | Units | Pollutant | Source | Downstream | Upstream | Dcounty | Ucounty | Priority for Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1994 | | 7255 | Creve Coeur Lake | 300 | Acre | Chlordane *5 | Urban nonpoint runoff | | | St. Louis | | L |
| A | 2002 | 1 | 7135 | Crowder SP Lake | 18 | Ac | Mercury | Atmospheric Deposition | 12,61N,25W | | Grundy | | M |
| | | | 221 | Dardenne Creek | 10 | | Unknown Pollutant *2 | Urban/Rural NPS | | | St. Charles | | L |
| | 1994 | 1 | 690 | Dark Cr. | 8 | Mi | Sulfate | Crutchfield AML | NE31,54N,15W | 34,55N,15W | Randolph | | M |
| C | 1994 | 3 1 | 912 | Davis Cr. | 2 | Mi | BOD/DO Nutrients | Odessa SE WWTP | SE10,48N,27W | N9,48N,27W | Lafayette | | H |
| A | 2002 | 1 | 7015 | Deer Ridge Comm. Lake | 48 | Ac | Mercury | Atmospheric Deposition | 18,62N,8W | | Lewis | | M |
| A | 2002 | 1 | 3050 | Ditch #1 | 44 | Mi | Mercury | Atmospheric Deposition | State Line | 27,29,12E | Dunklin | New Madrid | M |
| C | 1998 | 1 | 510 | Dog Cr. | 0.2 | Mi | **[NVSS] <Sediment>** *3, **6** | Traeger Quarry | NW13,58N,28W | NW13,58N,28W | Daviess | | L |
| C | 1996 | 1 | 3168 | Douger Br. | 2 | Mi | Zinc | Aurora AML | C11,26N,26W | W7,26N,25W | Lawrence | | M |
| | 1994 | | 1145 | Dry Auglaize Cr. | 1.5 | Mi | **<BOD, NFR>**, [Unknown], **6** | Lebannon WWTP, [NPS] | | | Laclede | | L |
| C | 1994 | 1 | 811 | E. Brush Cr. | 1 | Mi | Nutrients [BOD,NFR] *3 | California N. WWTP | SW10,45N,15W | C16,45N,15W | Moniteau | | L |
| **D** | | | 372 | E. Fk. Crooked Cr | | | <VSS, BOD,NFR> [Sediment] *1,3, **6** | | | | | | L |
| **D** | | | 457 | E. Fk. Grand River | | | [Sediment] *1, 3, **6** | | | | | | L |
| **D** | | | 608 | E. Fk Locust Cr. | | | DO, unknown *2, **6** | | | | | | L |
| | | | 619 | E. Fk. Medicine Cr | | | [Sediment] *1,3 | | | | | | L |
| C | 1994 | 1 | 1282 | E. Fk. Tebo Cr. | 1 | Mi | pH | Triple Tipple AML | C2,43N,24W | NW35,44N,24W | Henry | | H |
| **D** | | | 555 | E. Honey Cr. | | | Unknown *2, **6** | | | | | | L |
| A | 2002 | 1 | 7026 | Edina Res. | 51 | Ac | Atrazine, Cyanazine | Corn&Sorghum Production | NE12,62N,12W | | Knox | | H |
| A | 2002 | 1 | 2593 | Eleven Point R. | 21 | Mi | Mercury | Atmospheric Deposition | State Line | 18,24N,2W | Oregon | | M |

| S | Year | C | 2002W BID | Waterbody | Size | Units | Pollutant | Source | Downstream | Upstream | Dcounty | Ucounty | Priority for Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2604 | Eleven Point River | | | Chlorine *5 | | | | | | |
| | 1998 | 1 | 3246 | Elk R. | 21.5 | Mi | Nutrients | Livestock Production | SW21,22N,34W | 34,22N,32W | McDonald | | L |
| C | 1998 | 1 | 189 | Elkhorn Cr. | 2 | Mi | BOD, **[NVSS] <Sediment>** *3, **6** | Montgomery City WWTP | 9,49N,5W | 21,49N,5W | Montgomery | | H |
| C | 1994 | 1 | 7237 | Fellows Lake | 820 | Ac | Nutrients | Ag.&Suburban NPS | NE22,30N,21W | | Greene | | L |
| -- | | | | Fellows Lake | | | Mercury | Atmospheric Deposition | NE22,30N,21W | | Greene | | M |
| A | 2002 | 1 | 1605 | Femme Osage Slough | 5.5 | Mi | Mercury | Atmospheric Deposition | mouth | 29,45N,2E | St. Charles | | M |
| | | | 865 | Flat Cr | | | [Sediment] *1,3 | | | | | | H |
| C | 1994 | 1 | 2168 | Flat River Cr. | 5 | Mi | Lead, **[NVSS] <Sediment>** *3, **6** | Old Lead Belt AML | Sur.83,37,5E | NW18,36,5E | St. Francois | | H |
| -- | | | | Flat River Cr. | 5 | Mi | Zinc | Elvins tailings pile | Sur.83,37,5E | NW18,36,5E | St. Francois | | M |
| | 1998 | 1 | 37 | Fox R. | 12 | Mi | Manganese | Natural | 6,63N,5W | SE6,64N,6W | Clark | | L |
| A | 2002 | 1 | 7382 | Foxboro Lake | 25 | Ac | Mercury | Atmospheric Deposition | 14,42N,4W | | Franklin | | M |
| C | 1994 | 1 | 883 | Gabriel Cr. | 1 | Mi | [NFR] *3, BOD | 2 Stover Lagoons | SE34,43N,19W | NE3,42N,19W | Morgan | | H |
| A | 2002 | 1 | 1455 | Gasconade R. | 249 | Mi | Mercury | Atmospheric Deposition | mouth | 6,29N,14W | Gasconade | Wright | M |
| C | 1994 | 3 | 2860 | Goose Cr. | 0.5 | Mi | Nickel | Madison Mine outflow | SW10,33N,7E | C15,33N,7E | Madison | | H |
| A | 2002 | 1 | 2184 | Grand Glaize Cr. | 4 | Mi | Mercury | Atmospheric Deposition | mouth | 9,42N,5E | St. Louis | | M |
| **D** | | | 502 | Grindstone Cr | | | Sediment *1, **6** | | | | | | L |
| A | 2002 | 1 | 7384 | Grindstone Res. | 180 | Ac | Mercury | Atmospheric Deposition | NW8,57N,30W | | DeKalb | | M |
| **D** | | | 848, 849 | Heath's Creek-Hess Creek | | | Unknown *2, **6** | | | | Pettis | | L |
| | | | 442 | Hickory Creek | | | Unknown *2, | | | | Daviess | | L |
| | | | 589, 588 | Hickory Creek | | | Unknown *2, | | | | Grundy | | L |
| | | | 1007 | Hinkson Cr | | | Unknown *1 | | | | | | M |

| S | Year | C | 2002W BID | Waterbody | Size | Units | Pollutant | Source | Downstream | Upstream | Dcounty | Ucounty | Priority for Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **D** | | | 337 | Honey Cr | | | [Sediment] *1,3, **6** | | | | | | L |
| | | | 554 | Honey Cr | | | [Sediment] *1,3 | | | | | | L |
| | 1998 | 1 | 1251 | Honey Cr. | 3 | Mi | Sulfate | Reliant Shop AML | SW10,42N,27W | NE11,42N,27W | Henry | | M |
| A | 2002 | 1 | 3413 | Horseshoe Cr. | 3.1 | Mi | BOD, NH3N | 2 Oak Grove Lgns. | C 21,49N,29W | SW34,49,29 | Jackson | Lafayette | H |
| A | 2002 | 1 | 7388 | Hough Park Lake | 7 | Ac | Mercury | Atmospheric Deposition | 19,44N,11W | | Cole | | M |
| C | 1998 | 3 | 2582 | Howell Cr. | 0.3 | Mi | Chlorine | West Plains WWTP | W26,24N,8W | NE27,24N,8W | Howell | | H |
| C | 1998 | 1 | 7207 | HS Truman Lake | 10000 | Ac | Manganese | Natural | 7,40N,23W | | Benton | Bates | L |
| A | 2002 | 1 | 7029 | Hunnewell Lake | 228 | Ac | Mercury | Atmospheric Deposition | SW25,57N,9W | | Shelby | | M |
| C | 1998 | 1 | 212 | Indian Camp Cr. | 0.3 | Mi | NH3, **[NVSS] <Sediment>** *3, **6** | JZ Landfill | 10,47N,1W | 10,47N,1W | Warren | | M |
| | 1998 | 1 | 3256 | Indian Cr. | 26 | Mi | Nutrients | Livestock Production | NW1,21N,33W | 24,24N,31W | McDonald | Newton | L |
| | | | 1946 | Indian Cr | | | Zinc *2 | | | | Washington | | L |
| | | | | Indian Cr | | | **<pH>**, Fecal Coliform *2, **6** | | | | Jackson | | L |
| A | 2002 | 1 | 7288 | Indian Hills Lake | 326 | Ac | Mercury | Atmospheric Deposition | 22,39N,5W | | Crawford | | M |
| C | 1998 | 1 | 2681 | Jack's Fork R. | 7 | Mi | Fecal Coliform | Organic wastes | S9,29N,3W | E26,29N,4W | Shannon | | M |
| C | 1998 | 3 | 2347 | James R. | 28 | Mi | Nutrients | Urban Point & NPS | 10,24N,24W | 8,26N,22W | Stone | Christian | M |
| -- | | 1 | " | James R. | | | Mercury | Atmospheric Deposition | 10,24N,24W | 8,26N,22W | Stone | | M |
| C | 1998 | 3 | 2362 | James R. | 26 | Mi | Nutrients | Urban Point & NPS | 8,26N,22W | SE19,28N,21W | Christian | Greene | M |
| -- | | 1 | " | James R. | | | Mercury | Atmospheric Deposition | 8,26N,22W | Lake Spfd. | Stone | Greene | M |
| C | 1998 | 3 | 2365 | James R. | 4.5 | Mi | Nutrients | Urban NPS | SE16,28N,21W | SE35,29N,21W | Greene | | M |
| A | 2002 | 1 | 7105 | Jamesport City Lake | 30 | Ac | Mercury | Atmospheric Deposition | NE20,60,26 | | Daviess | | M |
| | | | 1016 | Kelley Br. | | | Sediment *1, *3 | | | | | | H |

| S | Year | C | 2002W BID | Waterbody | Size | Units | Pollutant | Source | Downstream | Upstream | Dcounty | Ucounty | Priority for Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 2002 | 1 | 7196 | Knob Noster SP Lakes | 24 | Ac | Mercury | Atmospheric Deposition | 29,46N,28W | | Johnson | | M |
| **D** | | | 1325 | L. Drywood Cr | | | Sediment *1,3, **6** | | | | | | L |
| | | | 623 | L. Medicine Cr | | | [Sediment] *1,3 | | | | | | H |
| C | 1998 | 3 | 3490 | L. Muddy Cr. Trib. (a.k.a. Tyson's Br) | 0.4 | Mi | Temperature | Tyson's Foods Inc. | NW13,46N,22W | NE14,46N,22W | Pettis | | H |
| C | 1998 | 1 | 1381 | L. Sac R. | 27 | Mi | Fecal Coliform | Pt/NP Sources* | 2,32N,24W | NW34,30N,22W | Polk | Greene | M |
| C | 1998 | 1 | 3249 | L. Sugar Cr. | 11 | Mi | Nutrients | Pt/NP Sources | SW34,22N,32W | S34,21N,31W | McDonald | | L |
| C | 1994 | 1 | 7023 | LaBelle No.2 Lake | 112 | Ac | Atrazine, Cyanazine | Corn&Sorghum Production | NE16,61N,9W | | Lewis | | H |
| -- | | | | Labelle No. 2 | | | Mercury | Atmospheric Deposition | | | | | M |
| | | | 7205 | Lake of the Ozarks | | | Low DO, Supersaturation, Fish Trauma *1 | | | | | | M |
| A | 2002 | 1 | 7436 | Lake of the Woods | 3 | Ac | Mercury | Atmospheric Deposition | NE2,48N,12W | | Boone | | M |
| A | 2002 | 1 | 7055 | Lake Ste. Louise | 50 | Ac | Fecal Coliform | Urban Runoff | 28,47N,2E | | St. Charles | | M |
| | | | 7054 | Lake St. Louis | | | Chlordane *5 | | | | | | |
| | | | 875 | Lake Cr | | | [Sediment] *1, 3 | | | | | | L |
| | | | 7314 | Lake Taneycomo | | | Low DO *1 | | | | | | M |
| C | 1994 | 1 | 7356 | Lamar Lake | 180 | Ac | Nutrients | Ag.NPS | NW32,32N,30W | | Barton | | L |
| A | 2002 | 1 | 847 | Lamine R. | 54 | Mi | Mercury | Atmospheric Deposition | mouth | 13,45N,19W | Cooper | | M |
| | | | 3105 | Lat. #2 Main Ditch | | | [Sediment] *1,3 | | | | | | H |
| A | 2002 | 1 | 7020 | Lewistown Res. | 27 | Ac | Atrazine, Cyanazine | Corn&Sorghum Production | SW8,61N,8W | | Lewis | | H |

| S | Year | C | 2002W BID | Waterbody | Size | Units | Pollutant | Source | Downstream | Upstream | Dcounty | Ucounty | Priority for Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C | 1998 | 1 | 1529 | Little Beaver Cr. | 0.1 | Mi | **[VSS] <NFR>** *3, **6** | Rolla SW WWTP | NE17,37N,8W | NE17,37N,8W | Phelps | | H |
| A | 2002 | 1 | 423 | Little Blue R. | 22 | Mi | Mercury | Atmospheric Deposition | 21,49,31 | Longview Dam | Jackson | | M |
| C | 1998 | 1 | 1438 | Little Lindley Cr. | 1 | Mi | BOD, **[VSS] <NFR>** *3, **6** | Buffalo WWTP | NE16,34N,20W | W15,34N,20W | Dallas | | H |
| C | 1998 | 3 | 856 | Little Muddy Cr. | 0.7 | Mi | Temperature | Tyson's Foods Inc. | NE13,46N,22W | NW13,46N,22W | Pettis | | H |
| | | | 248 | Little Tarkio Cr. | | | [Sediment] *1,3 | | | | | | H |
| | | | 3652 | Little Osage River | | | Low DO *1 | | | | | | L |
| **D** | | | 606 | Locust Cr. | | | [Sediment] *1,3, **6** | | | | | | L |
| C | 1998 | 1 | 7171 | Long Branch Res | 2430 | Ac | Mercury | Atmospheric Deposition | NW18,57N,14W | | Macon | | M |
| **D** | | | 339 | Long Branch | | | [Sediment] *1,3, **6** | | | | | | L |
| | | | 857 | Long Branch | | | Unknown *2 | | | | | | L |
| | | | 602 | Long Branch Creek | | | Unknown *2 | | | | | | L |
| A | 2002 | 1 | 7097 | Longview Res. | 930 | Ac | Mercury | Atmospheric Deposition | 20,47N,32W | | Jackson | | M |
| C | 1998 | 1 | 63 | M. Fabius R. | 57 | Mi | Manganese | Natural | NE29,60N,6W | 22,64N,12W | Lewis | Scotland | L |
| | | | 121 | M. Fk. Salt River | | | [Sediment] *1,3 | | | | | | L |
| C | 1994 | 1 | 1284 | M. Fk. Tebo Cr. | 5.5 | Mi | Sulfate | Newcastle,other AML | SE31,43N,24W | SE7,43N,24W | Henry | | M |
| C | 1994 | 1 | 1288 | M. Fk. Tebo Cr. Trib. | 1.5 | Mi | Sulfate | Newcastle Tipple AML | SE7,43N,24W | SW6,43N,24W | Henry | | M |
| -- | | | | M. Fk Tebo Cr. Trib. | 2 | Mi | pH,sulfate | Newcastle Tipple AML | SW6,43N,24W | NE36,44N,25W | Henry | | M |
| C | 1998 | 1 | 3262 | M. Indian Cr. | 3 | Mi | Nutrients | Livestock Production | 16,24N,30W | 12,24N,30W | Newton | | L |
| C | 1998 | 1 | 3263 | M. Indian Cr. | 2.5 | Mi | Nutrients | Livestock Production | C7,24N,30W | 16,24N,30W | Newton | | L |
| C | 1994 | 1 | 2814 | Main Ditch | 5 | Mi | VSS, BOD [Low DO] *3 | Poplar Bluff WWTP | C10,23N,6E | SE15,24N,6E | Butler | | H |

| S | Year | C | 2002W BID | Waterbody | Size | Units | Pollutant | Source | Downstream | Upstream | Dcounty | Ucounty | Priority for Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 468 | Main Fk Grand River | | | [Sediment] *1,3 | | | | | | H |
| | 1994 | 1 | 742 | Manacle Cr. | 2 | Mi | pH,Sulfate | Manacle Creek AML | SW3,48N,11W | S35,49N,11W | Callaway | | M |
| C | 1996 | 1 | 7033 | Mark Twain Lake | 18600 | Ac | Mercury | Atmospheric Deposition | 26,55N,7W | | Ralls | Monroe | M |
| | | | 1308 | Marmaton River | | | Low DO *1 | | | | | | L |
| **D** | | | 508 | Marrowbone Cr. | | | [Sediment] *1,3, **6** | | | | | | L |
| C | 1994 | 1 | 7236 | McDaniel Lake | 300 | Ac | Nutrients | Ag.&Suburban NPS | SE26,30N,22W | | Greene | | L |
| C | 1998 | 1 | 2787 | McKenzie Cr. | 0.5 | Mi | pH | Natural | NW3,29N,3E | SW34,30N,3E | Wayne | | M |
| A | 2002 | 1 | 2786 | McKenzie Cr. | 2.5 | Mi | BOD | Piedmont WWTP | mouth | SE34,29N,3E | Wayne | | H |
| A | 2002 | 1 | 1846 | Meramec R. | 75 | Mi | Mercury | Atmospheric Deposition | Meramec SP | 22,38N,5W | Franklin | Crawford | M |
| | | | 1299 | Miami Cr | | | [Sediment] *1,3 | | | | | | L |
| | | | 159 | Mill Cr | | | [Sediment] *1,3 | | | | | | L |
| | | | 1; 3152; 1707 | Mississippi R. | | | Chlordane, PCB (new pol.) *4 | | | | | | |
| C | 1998 | 1 | 1707 | Mississippi R. | 5 | Mi | Lead, Zinc | Herculaneum smelter | Selma, Mo. | Herculaneum | Jefferson | | H |
| | | | 1604, 701, 356, 226 | Missouri River | | | Chlordane,PCB (new pol.) *4,*1 | | | | | | L |
| | | | 356, 226 | Missouri River | | | **<Mercury>** *4, *1, **6** | | | | | | L |
| | 1998 | 1 | 1234 | Monegaw Cr. | 3 | Mi | Sulfate | Montee AML | SW21,39N, 28W | NE8,39N, 28W | St. Clair | | L |
| | 1996 | 1 | 7031 | Monroe City Route J Lake | 94 | Ac | Atrazine, Cyanazine | Corn&Sorghum Production | NE34,56N,7W | | Ralls | | H |
| C | 1998 | 1 | 1300 | Mound Br. | 1 | Mi | BOD, [Ammonia] *3 | Butler WWTP | N5,39N,31W | C34,40N,31W | Bates | | H |
| | | | 557 | Muddy Cr | | | Unknown *2, | | | | | | L |
| | | 3 | 855 | Muddy Cr | | | BOD | | | | | | L |

| S | Year | C | 2002W BID | Waterbody | Size | Units | Pollutant | Source | Downstream | Upstream | Dcounty | Ucounty | Priority for Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 674 | Mussel Fork | | | Sediment *1,3 | | | | | | H |
| C | 1998 | 1 | 56 | N. Fabius R. | 82 | Mi | Manganese, [Sediment] *3 | Natural | 24,59N,6W | 26,67N,14W | Marion | Schuyler | M |
| | | | 3188 | N. Fk. Spring River | | | [Sediment] *1,3 | | | | | | L |
| | 1998 | 1 | 3260 | N. Indian Cr. | 5 | Mi | Nutrients | Livestock Production | 24,24N,31W | 36,25N,30W | Newton | | L |
| | | | 942 | N. Moreau Creek | | | NFR *5 | | | | | | |
| A | 2002 | 1 | 7316 | Noblett Lake | 26 | Ac | Mercury | Atmospheric Deposition | 25,26N,11W | | Douglas | | M |
| **D** | | | 81 | North River | | | [Sediment] *1,3, **6** | | | | | | M |
| | | | 3041 | Old Channel Little River | | | [Sediment] *1,3 | | | | | | H |
| C | 1998 | 1 | 1031 | Osage R. | 82 | Mi | Mercury | Atmospheric Deposition | Mouth | Bagnell Dam | Osage | Miller | M |
| | 1998 | 1 | 3268 | Patterson Cr. | 2 | Mi | Nutrients | Livestock Production | NW16,22N,34W | NW11,22N,34W | McDonald | | L |
| | 1998 | | 2375 | Pearson Cr | 1.5 | Mi | Unknown Toxicity *1 | Unknown | | | | | M |
| A | 2002 | 1 | 217 | Peruque Cr. | 4 | Mi | NVSS | Urban/Rural NPS | SE32,47,2E | SE25,47,1E | St. Charles | | M |
| A | 2002 | 1 | 218 | Peruque Cr. | 8.5 | Mi | NVSS | Urban/Rural NPS | SE25,47,1E | SE23,47,1W | St. Charles | | M |
| C | 1998 | 3 | 2614 | Piney Cr. | 0.1 | Mi | Chlorine | Alton WWTP | NW2,23N,4W | NW2,23N,4W | Oregon | | H |
| C | 1998 | 1 | 1444 | Piper Cr. | 0.5 | Mi | **[VSS] <NFR>** *3, **6** | Bolivar WWTP | 6,33N,22W | 6,33N,22W | Polk | | H |
| | | | 7211 | Plesant Hill Lake | | | Chlordane *5 | | | | | | |
| C | 1998 | 1 | 2128 | Pond Cr. Trib. | 0.5 | Mi | **[NVSS] <Sediment>** *3, **6** | Barite Tailings Pond | SW35,38N,3E | E3,37N,3E | Washington | | L |
| A | 2002 | 1 | 2038 | Red Oak Cr. | 2 | Mi | VSS | Owensville WWTP | 31,42N,4W | 36,42N,5W | Gasconade | | H |
| A | 2002 | 1 | 3360 | Red Oak Cr. Trib. | 0.5 | Mi | VSS | Owensville WWTP | 36,42N,5W | 35,42N,5W | Gasconade | | H |
| A | 2002 | 1 | 3361 | Red Oak Cr. Trib. | 0.5 | Mi | VSS | Owensville WWTP | 35,42N,5W | 27,42N,5W | Gasconade | | H |
| | | | | River Des Peres | | | Low DO *2 | Urban NPS | | | | | L |
| C | 1996 | 3 | 1714 | Rock Cr. | 2 | Mi | BOD, NH3 | 2 WWTPs | NW21,42N,6E | SE18,42N,6E | Jefferson | | H |

| S | Year | C | 2002W BID | Waterbody | Size | Units | Pollutant | Source | Downstream | Upstream | Dcounty | Ucounty | Priority for Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 2002 | 1 | 3326 | Rocky Br. | 0.4 | Mi | BOD | KC, Rocky Br. WWTP | NE11,52N,33W | NE11,52N,33W | Clay | | H |
| C | 1998 | 1 | 1014 | Rocky Fk. | 0.5 | Mi | **[NVSS] <Sediment>** *3, **6** | Finger Lakes AML | NE1,49N,13W | SE36,50N,13W | Boone | | M |
| | | | 278 | Rush Creek | | | NFR, BOD *5 | | | | | | |
| | | | 652 | Sandy Creek | | | Unknown *2 | | | | | | L |
| | | | 921 | S. Fk. Blackwater River | | | [Sediment] *1,3 | | | | | | H |
| | 1998 | 1 | 3259 | S. Indian Cr. | 9 | Mi | Nutrients | Livestock Production | 24,24N,31W | 1,23N,30W | Newton | | L |
| C | 1998 | 1 | 50 | S. Wyaconda R. | 9 | Mi | Manganese | Natural | 26,65N,9.W | 4,65N,10W | Clark | Scotland | L |
| | | | 50 | S. Wyaconda River | | | [Sediment] *3 | | | | | | H |
| C | 1994 | 3 | 2859 | Saline Cr. | 0.5 | Mi | Nickel | Madison Mine outflow | SE9,33N,7E | SW10,33N,7E | Madison | | H |
| C | 1994 | 3 | 2190 | Saline Cr. | 3.2 | Mi | BOD,NH3 | 2 NESD WWTPs | E14,43N,5E | 3011,43N,5E | Jefferson | | H |
| C | 1994 | 1 | 103 | Salt R. | 10 | Mi | Manganese, Iron | Cannon Dam | NE9,55N,6W | NE26,55N,7W | Pike | Ralls | L |
| C | 1998 | 1 | 91 | Salt R. | 29 | Mi | Manganese | Cannon Dam | SE23,55N,3W | NE9,55N,6W | Ralls | | L |
| -- | | | | Salt R. | | | Mercury | Atmospheric Deposition | SE23,55N,3W | NE9,55N,6W | Ralls | | M |
| A | 2002 | 1 | 7280 | Schuman Park Lake | 5 | Ac | Mercury | Atmospheric Deposition | 2,37N,8W | | Phelps | | M |
| | 1994 | 1 | 1319 | Second Nicholson Cr. | 3 | Mi | Sulfate | Many AML Areas | W4,32N,33W | C18,32N,33W | Barton | | M |
| | | | 860 | Sewer Br | | | Unknown, DO *2 | Unknown Pt & NPS sources | | | | | L |
| C | 1994 | 1 | 2170 | Shaw Br. | 2 | Mi | Lead, **[NVSS] <Sediment>** *3, **6** | Federal AML | NE7,36N,5E | SW20,36N,4E | St. Francois | | M |
| C | 1998 | 1 | 2120 | Shibboleth Br. | 0.5 | Mi | **[NVSS] <Sediment>** *3, **6** | Barite Tailings Pond | NW22,38N,3E | NE21,38N,3E | Washington | | L |
| C | 1998 | 1 | 3230 | Shoal Cr. | 13.5 | Mi | Fecal Coliform | Unknown Ag. Sources | N15,25N,29W | 12,23N,28W | Newton | Barry | M |
| C | 1998 | 1 | 7077 | Smithville Res. | 7190 | Ac | Mercury | Atmospheric Deposition | SW13,53N,33W | | Clay | | M |
| | | | 3134 | Spillway Ditch | | | [Sediment] *1,3 | | | | | | H |

| S | Year | C | 2002W BID | Waterbody | Size | Units | Pollutant | Source | Downstream | Upstream | Dcounty | Ucounty | Priority for Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **D** | | | 657 | Spring Creek | | | [Sediment] *1,3, **6** | | | | | | H |
| C | 1994 | 1 | 1870 | Spring Cr. | 0.3 | Mi | BOD, **[VSS] <NFR>** *3, **6** | Salem WWTP | SW12,34N,6W | SE12,34N,6W | Dent | | H |
| C | 1994 | 1 | 7187 | Spring Fork Lake | 178 | Ac | Nutrients | Ag.NPS | SW21,44N,21W | | Pettis | | L |
| | 1994 | 1 | 2835 | St. Francis R. | 3 | Mi | BOD, NH3 | Farmington W. WWTP | N19,35N,6E | SE11,35N,5E | St. Francois | | H |
| C | 1994 | 1 | 710 | Stinson Cr. | 0.1 | Mi | BOD, VSS, **<Ammonia>** *3, **6** | Fulton WWTP | NE21,47N,9W | NE21,47N,9W | Callaway | | H |
| C | 1998 | 1 | 1361 | Stockton Br. | 1.7 | Mi | **[VSS] <NFR>** * 3, **6** | Stockton WWTP | NW4,34N,26W | SW4,34N,26W | Cedar | | H |
| C | 1998 | 1 | 959 | Straight Fk. | 1.1 | Mi | **[VSS] <NFR>** *3, **6** | Versailles WWTP | SE24,43N,18W | C36,43N,19W | Morgan | | H |
| C | 1994 | 3 | 686 | Sugar Cr. | 2 | Mi | pH | Huntsville+Calfee AML | SE23,54N,15W | SW19,54N,14W | Randolph | | M |
| A | 2002 | 1 | 3151 | Swift Ditch | 4 | Mi | Mercury | Atmospheric Deposition | 26,23N,14E | 2,23N,14E | New Madrid | | M |
| A | 2002 | 1 | 7313 | Table Rock Res. | 43100 | Ac | Nutrients | Point&Nonpoint source | NW22,22N,22W | | Stone | | L |
| | | | 327 | Third Fk. Platte River | | | [Sediment] *1,3 | | | | | | L |
| C | 1994 | 1 | 2850 | Trace Cr. | 1 | Mi | pH | Natural | SE29,32,6E | NE29,32,6E | Madison | | M |
| C | 1998 | 1 | 73 | Troublesome Cr. | 3.5 | Mi | Manganese, [Sediment] *3 | Natural | NE24,59N,7W | 15,59N,7W | Marion | | L |
| | 1994 | 1 | 3217 | Turkey Cr. | 5 | Mi | Zinc | Duenweg AML | 35,28N,33W | 9,27N,32W | Jasper | | M |
| C | 1994 | 1 | 3216 | Turkey Cr. | 3.5 | Mi | Zinc | Multiple Pb-Zn AMLs | SE29,28N,33W | 35,28N,33W | Jasper | | M |
| C | 1998 | 1 | 3282 | Turkey Cr. | 1.5 | Mi | BOD, **[VSS] <NFR>** *3, **6** | Bonne Terre WWTP | NE2,37N,4E | NE11,37N,4E | St. Francois | | H |
| C | 1998 | 1 | 7032 | Vandalia Lake | 37 | Ac | Atrazine | Corn & Sorghum Production | SE 12, 53N, 5W | | Pike | | H |
| C | 1994 | 1 | 2864 | Village Cr. | 0.5 | Mi | **[NVSS] <Sediment>** *3, **6** | Mine La Motte AML | SW34,34N,7E | C34,34N,7E | Madison | | H |
| **D** | | | 449 | W. Fork Big Cr | | | [Sediment] *1,3, **6** | | | | | | L |
| | 1998 | 1 | 2755 | W. Fk. Black R. | 0.2 | Mi | Nutrients | Doe Run West Fk. Mine | SE1,32N,2W | SE1,32N,2W | Reynolds | | L |

| S | Year | C | 2002W BID | Waterbody | Size | Units | Pollutant | Source | Downstream | Upstream | Dcounty | Ucounty | Priority for Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 612, 613 | W. Fk Locust Creek | | | Unknown *2 | | | | | | L |
| | | | 612 | W. Fk. Locust Cr | | | **<Sediment>** *1,3, **6** | | | | | | H |
| C | 1998 | 1 | 400 | W. Fk. Sni-a-Bar Cr. | 2 | Mi | BOD, **[VSS] <NFR>** *3, **6** | Lake Lotawana Lgn. | SE21,48N,30W | NW33,48N,30W | Jackson | | H |
| C | 1998 | 1 | 1292 | W. Fk. Tebo Cr. | 7 | Mi | Sulfate | Spangler AML | SE24,42N,25W | SE9,42N,25W | Henry | | M |
| A | 2002 | 1 | 7453 | Wallace SP Lake | 6 | Ac | Fecal Coliform | Unknown | NE24,56N,30W | | Clinton | | M |
| C | 1994 | 1 | 1339 | Walnut Cr. | 1 | Mi | BOD, **[VSS] <NFR>** *3, **6** | ElDorado Springs WWTP | SW8,36N28W | NE17,36N,28W | Cedar | | H |
| A | 2002 | 1 | 7087 | Watkins Mill Lake | 126 | Ac | Fecal Coliform | Unknown | NW22,53N,30W | | Clay | | M |
| A | 2002 | 1 | 7071 | Weatherby Lake | 194 | Ac | Mercury | Atmospheric Deposition | SE15,51,34 | | Platte | | M |
| C | 1998 | 3 | 1505 | Whetstone Cr. | 2 | Mi | BOD | 2 Mtn.Grove WWTPs | C26,29N,13W | SW31,29N,12W | Wright | | H |
| **D** | | | 345 | White Cloud Cr | 345 | | [Sediment] *1,3, **6** | | | | | | L |
| | | | U | Willow Branch | | | Unknown *2 | | Putnam Cnty | | | | |
| | | | 2375 | Wilson's Cr | | | Unknown toxicity *1 | | | | | | M |
| A | 2002 | 1 | 7212 | Winnebago Lake | 350 | Ac | Mercury | Atmospheric Deposition | NW9,46N,31W | | Cass | | M |
| | 1998 | 1 | 46 | Wyaconda R. | 8 | Mi | Manganese | Natural | NW30,61N,5W | 15,61N,6W | Lewis | | L |

**Key:**

**S**=Status: **A**=proposed addition to list; **C**=proposed change for waterbody on the 1998 list; **blank**= no change in listing from 1998; **--** = extra line for same waterbody segment

**D**=Delist

**Year**= Year waterbody was added to 303(d) list

**C**=Category: **1**= discrete pollutant, TMDL required; **3**= TMDL completed and approved by EPA

**WBID** = Water Body Identification number; **U**=Unclassified (i.e., no WBID)

**Size**=size of impairment, miles for streams and surface acres for lakes

**Downstream**= legal description of location of downstream end of impairment

**Upstream**=legal description of location of upstream end of impairment

**Dcounty**=Name of county that downstream end of impairment is located in

**Ucounty**=Name of county that upstream end of impairment is located in

*** 1 -** Waterbodies Added back (i.e., restored) by EPA
*** 2 -** Waterbodies Added by EPA
*** 3 -** Pollutants added back (i.e., restored) by EPA
*** 4 -** Pollutants added by EPA
*** 5 -** Category 3 waterbody/pollutants added by EPA
*** 6 - Revised following EPA Public Comment Period (Revisions are highlighted in bold)**

**< > -** indicates that pollutant is removed/deleted
**[ ] -** indicates pollutant that has been restored or added

**Special note regarding TMDLs Completed:**

MDNR's final 2002 Section 303(d) List identifies Category 1 and Category 3 waters only. According to the State's 2002 Listing Methodology, Category 1 applies to waters where: (a) Numeric water quality criteria for one or more discrete pollutants cause the water to be rated as "partial attainment" or "non-attainment"; or (b) Observed water quality conditions are judged to exceed state narrative water quality criteria. Category 3 applies to "waters for which a TMDL has been established and approved by USEPA". It does not appear, however, that Missouri's 2002 list includes all waterbodies or pollutants for which TMDLs have been established. EPA recognizes that states are not currently required to include, on their 303(d) lists, waterbodies for which TMDLs have been established. As a courtesy, to clarify for the public and MDNR, EPA is including, in this enclosure, waterbodies/pollutants for which TMDLs have been established.